

# COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper

Second-class postage paid at Boston, Mass., and additional mailing offices

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Price: \$12/year

July 16, 1975

Vol. IX, No. 29



## TV Watchers Sparked To Back Price Marking

By Patrick Ward  
Of the CW Staff

WASHINGTON, D.C. — A recent television news feature on automated supermarkets sparked a flood of letters to the Senate Commerce Committee urging that stores continue to mark prices on the items they sell.

About 97% of the letter writers said prices should be left on packages, even though automated checkout terminals can read the Universal Product Code (UPC) and save supermarkets the cost of stamping prices.

The surge of letters began arriving after the Wednesday, March 26 evening news broadcast on ABC-TV. By the following Tuesday, 211 letters had been delivered to the committee.

The letters appeared to come from individuals who had watched the program, a Senate aide said, and not from members of consumer lobbying groups.

A tabulation of the opinions expressed in those letters has been circulated among Commerce Committee members, who are

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## EFTS Clearinghouse Starts Pilot Program

By Don Leavitt  
Of the CW Staff

PHILADELPHIA — All the planning has been done and this month a new automated clearinghouse (ACH), based here and serving Delaware, half of New Jersey and most of Pennsylvania, began pilot operations with plans to go "live" on Sept. 1.

This ACH is geared to serve the Third District of the Federal Reserve Bank System and will support "all of the electronic funds transfer systems (EFTS) applications." These include automatic deposits of payroll and Social Security payments and preauthorized withdrawals from customer accounts to pay specified bills, according to Paul Stark, EFTS project manager at the local "Fed" branch.

The Third District Automated Clearing House ("III-Dach," but we're not going to keep that name") will differ from other, similar operations in both membership and initial scope of activity, Stark noted.

Unlike most of the ACHs now in operation, membership in III-Dach is open to any financial institution within the district whose deposits are federally insured. This means, Stark acknowledged, that credit unions, savings and loan associations

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## For Federal Agencies

# OMB Issues Privacy Act Guidelines

By Nancy French  
Of the CW Staff

WASHINGTON, D.C. — The Office of Management and Budget (OMB) issued guidelines last week that will set into motion dramatic changes in the way government agencies collect and use personal information on U.S. citizens.

The Privacy Act of 1974 gave OMB the responsibility for issuing guidelines and regulations to assist agencies in interpreting and implementing the act.

According to the OMB circular, each agency will be expected to identify each system of records it maintains, review the

contents to assure that only "relevant and necessary" information is being maintained within those files and that no information about the political or religious beliefs and activities of individuals is being kept.

Then, on or before Aug. 27, each agency will publish in the *Federal Register* a definition of "routine use" for each record system containing personal information as well as a description of procedures and rules being adopted to assure they are in compliance with the Privacy Act.

Finally, by Sept. 27, the effective date

of the Privacy Act, each agency must publish a list of its "systems of records," including name and location of the system and categories of individuals on whom records are being maintained.

According to the guidelines, no system of records is automatically exempt from any provision of the act. Agencies such as the Central Intelligence Agency and the Federal Bureau of Investigation mentioned as "exempt" in the Privacy Act itself must make a formal determination that one or more of its systems falls within one of the exempt categories.

According to the circular, agencies should begin to assure that information collected about an individual which may result in adverse determination about him should be collected "wherever practicable" from the individual himself.

At the time of collection, the individual should be informed of the purpose and use of that information as well as his rights, benefits or obligations with respect to supplying that data.

Each agency must revise personal data collection forms or procedures to assure that individuals who provide information about themselves are advised of their rights and obligations at the time they provide the information.

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## U.S. vs. IBM Trial Put on Ice As Court Recesses for Summer

By Edith Holmes  
Of the CW Staff

NEW YORK — U.S. vs. IBM has been mothballed for the summer.

Having just scratched the surface of the government's case in its antitrust suit against IBM, the U.S. District Court here recessed last week until Sept. 22 at the request of both sides.

Recess is not to be equated with vacation for either side, however. The government and IBM have before them some 150 depositions to take and further discovery to complete on the issues of IBM's alleged monopolization of the peripherals market and its use of leasing to stifle competition — issues that were added to the case last January with the permission of presiding Judge David N. Edelstein.

These issues charge IBM with the monopolization of the general-purpose computer systems market.

Frustrated with repeated attempts to begin the trial, the judge insisted the case commence on its third scheduled date of May 19 and told the parties to defer their preparation of the peripherals and leasing issues until this summer. The case had been scheduled to start on Oct. 7 of last year and again last Feb. 18.

This trial of the government's case against IBM is presently just one day short of the 29-day Telex vs. IBM anti-

trust suit begun in the district court in Tulsa, Okla., nearly two years ago. The pages of transcript in that case numbered 6,560; the pages of record in this case already number 4,400.

As of Wednesday of last week, the government had entered 198 exhibits into evidence and IBM had provided the court

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## System Upgrade Uncovers Fraud In Illinois Welfare Department

By Nancy French  
Of the CW Staff

SPRINGFIELD, Ill. — A newly upgraded quality control system at the Illinois Department of Public Aid's (IDPA) DP center has identified a case of fraud involving a caseworker, a terminal operator and two welfare recipients — but only after 173 unauthorized \$425 checks had been issued and cashed.

Indicted on various counts of fraud, conspiracy and theft by deception were Annie Quinn, 28, a terminal operator who was fired from her job in a Chicago public aid district office in February after the scheme was discovered; Van Strick-

land, 25, an employee of the Illinois Bell Telephone Co.; and two welfare recipients — Carol Powell and Roberta Jackson, both 25.

Judge Frank Wilson will hear the case at the Cook County Court later this month. The scheme worked because a member of the fraud team was in a position to control every stage of the payment process. The checks were issued on the Mercury account, a system designed to provide one-time-only emergency assistance.

In the interest of speed, fewer safeguards were imposed during the caseworker's authorization phase, according to Garry Paddick, chief of IDPA's Bureau of Information Systems.

Under the scheme, the caseworker completed forms authorizing the transactions for emergency assistance. The transactions were fed into the DP center here via an IBM 2741 terminal at a Chicago field office. At the center, checks were printed and mailed to phony recipients.

The phony recipients then cashed the checks and split the weekly take with the other members of the team.

Last October, a new quality control system was implemented to permit closer scrutiny of the entire information system, Paddick said.

Under that system, a review of the reports of all disbursements from the IDPA's normal assistance accounts as well as the special programs was instituted, Paddick said.

On special programs such as Mercury,

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## Model 12 Extends IBM S/3 Line

By Vic Farmer  
Of the CW Staff

ATLANTA — The track was fast here last week as IBM announced its System/3 Model 12; lower purchase prices on the older, core memory System/3s; a Term Availability Plan (TAP) for System/3s with metal oxide semiconductor field effect transistor (MOSFET) memories; and a Local Display Adapter to allow more terminals on the MOSFET systems.

The Model 12 is now the smallest of the IBM systems using the 3340 disk system. It gives 91.9M characters of storage.

According to IBM, the Model 12 can operate either with or without punched cards. Configurations include either 80- or 96-column punched card equipment, magnetic card and diskette media, mag-

netic tapes, cardless computing through use of IBM 3741 data stations, a range of printer options and a variety of communications alternatives.

The model's System Control Programming allows the computer to employ print spooling under which the CPU can put lines to be printed into temporary disk storage before printing. IBM said this technique shortens turnaround time in most job streams by capitalizing on processor speed and by not limiting processing to the speed of the printer.

MOSFET memory for the Model 12 is available in three sizes: 32K, 48K and 64K.

The Local Display Adapter is said to allow direct attachment of up to 12

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# Government Report Says

## IRS Maintained Files on Citizens' Habits

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By Toni Wiseman  
 Of the CW Staff  
 WASHINGTON, D.C. — The Internal Revenue Service (IRS) maintained nationwide computerized files of personal information about selected taxpayers from May 1973 to January 1975, according to a recently published government report.

The system, known as the Intelligence Gathering and Retrieval System (IGRS), contained personal information on prominent citizens including, in some cases, information on their sexual and social habits.

The IRS suspended the system Jan. 23 when its deputy commissioner ordered intelligence-gathering activities halted. At that time, he noted the system had major defects, including lack of input and purging controls.

According to the government report released by Rep. Al Ullman (D-Ore.), chairman of the congressional Joint Committee on Internal Revenue Taxation, the IGRS targets were prominent citizens, including politicians and judges, singled out by Justice Department officials who believed "Miami was a watering hole for racketeers as well as a spawning ground for local corruption."

The report summarized an internal IRS investigation covering both IGRS and a Miami-based facet of IGRS termed "Operation Leprechaun."

This investigation team, headed by an assistant commissioner of the IRS and composed of the Internal Security and

Internal Audit Divisions, is still gathering information on the IRS activity.

In early 1972, an IRS study group selected the Jacksonville, Fla., district as one of several districts to test procedures for gathering, evaluating, filing and retrieving intelligence information. The other centers were New York City, Chicago and Los Angeles.

The IGRS test in the Jacksonville district ran from May 1, 1972 to May 4, 1973, when the national system for intelligence gathering and retrieval was implemented, according to the Ullman report. At this point, the IGRS unit was formally established in Miami, in September 1973.

The new procedures provided for a centralized computer system for indexing intelligence information files and open cases.

The system was an index, not a data bank of information; the computer contained the location of information items, not the information itself.

It also provided for special units for gathering the information and preparing and editing documents for input to the centralized computer system, the report stated, adding that the IGR was completely separate from the computerized system which processes tax returns.

"Correspondence files, special agent diaries, chronological worksheets, informant communications and IGRS files did not disclose evidence indicating that IGRS information was given directly to the FBI or CIA," the report stated.

## System Upgrade Uncovers Fraud

(Continued from Page 1)

The reports indicate by name, Social Security number and case number all recipients receiving special assistance, multiple checks or excessive dollar amounts (\$500 or more) during any given month.

The suspicious checks were discovered at this point some six months after the scheme started. Once the department discovered the problem, it surveilled the originating office and trapped the individuals entering the transactions.

As a result of the \$73,525 loss, the department has initiated several new precautions.

"First of all, we are now producing quality control reports monthly rather than quarterly, and we are scrutinizing those reports much more closely," Paddick said.

Secondly, tighter controls have been placed on the Mercury system, in particular, at the field-office level. Each authori-

zation now must indicate whether the emergency aid recipient is a new case or an existing one for cross-referencing against the regular assistance files, he said.

Each authorization also must indicate the reason for the emergency aid.

The IDPA system uses most of the computer power generated by an IBM 370/168 and a 158, with about 1.5M bytes of memory to support teleprocessing, Paddick said.

"We are the world's largest user of the Customer Information Control System (CICS), IBM's telecommunications system," Paddick said.

The state's client information system is now based on a fully integrated on-line data base management system covering income maintenance and food stamps.

The statewide telecommunications network handles 750,000 transactions daily from more than 300 terminals, according to Paddick.

"Some types of information were exchanged with other agencies who participate in narcotics and strike force activities.

"The IRS does cooperate with the FBI and Justice Department in matters where Strike Force activities are involved," the report continued. "In these instances, IRS information can be made available to the Department of Justice."

### Most Data News Articles

The investigation showed that, in the case of prominent individuals, most of the information documents indexed were news articles, 77% in the case of the Jacksonville files.

In addition to news articles, items indexed included tax return information, memorandums or reports from special agents, police reports, financial information from public records, data from informants and similar material.

Minutes of a background files study group meeting held in September 1972 show the supervisors had agreed information to be included should relate to financial transactions with potential tax consequences or illegal activities involving a potential for unreported or understated income "or other offenses within our jurisdiction."

"In all four districts, we found that many of the documents indexed in the system did not meet the criteria of financial transactions or illegal activities with tax potential... Many of the items indexed were of doubtful value to any tax investigation," the report said.

In addition, the investigation found insufficient data input screening had resulted in the indexing of former IRS commissioners, regional commissions, senators and the IRS itself, merely because the names appeared in the same news article or documents in which a subject's name appeared.

In the three other districts, tests of 30 randomly selected names involving 424 line items were conducted by the investigators. The tests showed information concerning sex or drinking habits was not collected, but social activities, such as gossip column items on a subject's marriage, did appear.

In Jacksonville, a random test of 66 prominent individuals in the index showed 77% of the 322 line item were newspaper articles. The remaining 23% contained general background information or tax-related information; 10 of the documents also contained information about sexual and social activities, the report stated.

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Second-class postage paid at Boston, Mass., and additional mailing offices. Published weekly (except: a single combined issue for the last week in December and the first week in January) by Computerworld, Inc., 797 Washington St., Newton, Mass. 02160. © 1975 by Computerworld, Inc. All rights reserved.

50 cents a copy; \$12 a year in the U.S.; \$20 a year for Canada and PUAS; all other foreign, \$36 a year. Four weeks notice required for change of address.

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# Federal Agencies Get Guidelines For Privacy Act Implementation

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Disclosures of personal information that do not fall under "routine use" as described in the notice each agency publishes in the *Federal Register* must be "accounted for," according to the guidelines.

That phrase is being used rather than "recorded," OMB said, to indicate an agency need not make a notation on a specific document every time a particular record is disclosed.

The agency may use any system it desires, provided it can "construct from its system a document listing all disclosures," the guidelines explained.

For example, if a list of names and other pertinent data necessary to issue payroll or benefit checks is transferred to a disbursing office outside the agency, the agency transferring the record need not maintain a separate record of such transfers in each individual record, provided the agency can construct the required accounting information when requested by the individual or when it is needed to inform previous recipients of any corrected or disputed information.

## Accounting of Disclosures

Under the Privacy Act, individuals are entitled to obtain that accounting of disclosures. Agencies which choose to follow the OMB guidelines may face some difficulties "reconstructing" that accounting to make it "intelligible" to the individual, the guidelines indicated.

In cases where records have been disputed and corrected at the request of an individual, an agency is responsible for notifying each agency or person to which the record has been disclosed of the exact nature of the correction or that a notation of dispute has been made.

This does not apply to disclosures to personnel within the agency with a "need to know" or to the public under the Freedom of Information Act.

The circular pointed out, given the definition of "record," it would appear the notification of correction or of the filing of a statement of disagreement is required only to the extent that the correction or disagreement pertains to the information actually disclosed.

## Individual Access

As for individual access to personal records, OMB interpreted the law to mean an individual should be given access only to information the agency retrieves by his or her name or some other identifying particular.

An agency may charge a fee for making copies of individuals' records, but not for the cost of searching for a record or reviewing it, the circular said. If an agency must copy a record as a necessary part of making a record available for review, no fee may be charged, the guidelines said.

In some cases, data will be in computer code. The guidelines recommended agencies convert data into its literal meaning, but "not necessarily provide" an extensive tutorial in the agency's procedures in which the record is used.

Agencies which maintain medical information are cautioned that special care may be needed in providing that information to the individual. While their "right" to have access to their medical and psychological records "is clear," the rules the agency promulgates should provide a means whereby an individual who would be adversely affected by receipt of such data might be protected.

The guidelines suggest transmitting the information to a doctor named by the requesting individual.

Timetables for responding to individuals' inquiries set by the OMB are strict. Agencies are asked to acknowledge requests for access to records within 10

days of receipt of the request, excluding Saturdays, Sundays and holidays.

When possible, that acknowledgement should indicate whether access can be granted and, if so, when. Access should be granted within 30 days, unless, "for good cause," the agency is unable to do so.

As for requests to amend records, the same 10-day acknowledgement requirement applies, unless the agency can fulfill the request in that time. If so, the agency then may merely inform the individual the change has been made.

When an individual files a statement disagreeing with the agency decision not to amend a record, the agency should clearly annotate the record so the fact the record is disputed is apparent to anyone who may access, use or disclose the data.

## Data Misuse the Target

WASHINGTON, D.C. — A key objective of the Privacy Act of 1974 is to reduce the risk of intentional or inadvertent misuse of personal data by reducing the amount of personal information collected by federal agencies, according to final implementation guidelines issued by the Office of Management and Budget (OMB) last week. "Information not collected about an individual cannot be misused," the guidelines pointed out.

Agencies derive authority to collect information about individuals in one of two ways:

- The Constitution, a statute or executive order explicitly authorizing or directing the maintenance of a system of records such as the census.
- The Constitution, a statute or executive order authorizing or directing the agency to perform a function

which requires the maintenance of a system of records.

In establishing such a system, each agency must identify the specific legal provisions which authorize the activity.

In maintaining such records, the agency must review the nature of the information it maintains in its systems to assure it is in fact both relevant and necessary, the OMB guidelines said.

In making such a review, agencies are urged to explore alternatives for collecting information such as using information that is not in individually identifiable form.

Further, agencies should ask themselves how long it is necessary to retain such information and whether the costs of maintaining the record compare with the risk/adverse consequences of not maintaining it.

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# U.S. vs. IBM Antitrust Trial Recesses Until Sept. 22

(Continued from Page 1)

with 63 documents, charts and reports. The government was expected to add eight additional charts and tables providing a statistical representation of its market definition portion of the case, along with the documents used to create them.

The court used the week following its July 4 recess to tie up loose ends in the case, completing both the government's market definition presentation and the testimony of Robert E. McDonald, president of the Sperry Rand Corp.

Seventh on the government's witness list of 67, McDonald was preceded by Sidney Fernbach and Nicholas C. Metropolis, computer scientists at Federal Atomic Energy Laboratories; A.J. Perlis, professor of computer science at Yale University; J. Pespers Eckert, technical advisor to the president of Sperry Rand and one of the first to build an electronic digital computer; Frederick M. Scherer, an economics professor at the University of Michigan now on leave with the Federal Trade Commission; and Max Palevsky, *Rolling Stone* enthusiast and former chief

executive officer of Scientific Data Systems, which later merged with Xerox.

At present, IBM plans to call some 800 witnesses in its defense against monopoly charges.

The court also used last week to hold a brief "pretrial" conference with IBM and Justice Department attorneys to discuss various housekeeping matters. Of particular importance to Edelstein was the procedure to be used in taking the additional deposition testimony.

The judge's displeasure with both the Eckert and McDonald depositions — which he felt left many basic questions unanswered — precipitated a memorandum to the parties instructing them on procedures to be followed in the summer deposition program.

Lead IBM attorney Thomas D. Barr noted that many of the attorneys on both sides took "the first depositions of their lives in this case." Some 1,200 depositions had been taken before the trial began in May, he added.

As soon as possible, attorneys for IBM and the government are expected to give

the judge their best estimates of how long the trial will last. Recognizing the case is likely to continue for some time, however, and in the interests of avoiding a mistrial, Edelstein has requested both sides to stipulate the record for six months at a time so that a new judge coming in could pick up wherever Edelstein left off.

The government has agreed to accept the record in this way, and IBM is considering the proposal. The record has been accepted by both sides through the Sept.

22 date for resumption of the trial.

Edelstein plans to meet with the parties on Sept. 16 to assess their progress and discuss any problems. All have pledged to remain within hailing distance of New York City during the summer should difficulties arise.

When the trial begins again in the fall, Raymond M. Carlson, lead attorney for the government, said, the Justice Department plans to have between 25 and 30 industry witnesses take the stand on its behalf.

## EFTS Clearinghouse Starts Up

(Continued from Page 1)

tions and mutual savings banks can be members, along with commercial banks.

Normally ACH membership has been limited to commercial banks, but the system "is going to have to be open in the future if it's going to work. In a telecommunications mode, the banks don't really care what kind of institution is on the other end, but they do want to serve their customers," Stark noted.

The Philadelphia-based ACH is "luckier than most others" because it will have Air Force automated payroll deposits starting Sept. 1, "the same day we start," he said. This is lucky, he explained, because it will force III-Dach to function with a big volume right from the beginning.

"We'll be getting lots of input — something like 12,000 item/mo — and our banks will be getting lots of EFTS output, and they'll have to handle it. They'll have to figure out what they're doing and they won't be able to leave it in an 'In basket' and forget about it."

Stark indicated the National Commission on Electronic Funds Transfer — still unnamed last week, nearly eight months after it was authorized — apparently would have no impact on what III-Dach is trying to do right now. He admitted he'd like to get into point-of-sale (POS) operations, "but I don't think we'll be allowed to until the commission comes out with something."

One of the things the commission may try to figure out, he thought, is whether EFTS/POS operations will be some sort of competitive advantage for bigger banks and whether there is a need for legislation to limit or control that advantage.

Speaking personally, he feels the Third District would be "supremely suited" to taking a supermarket chain and a bank and setting up an EFTS/POS net. "I'd like to see the Third District be first for a change."

III-Dach is using the first two weeks of July as a certifying period to be sure the

software used by the originating banks is compatible with that used by the clearinghouse. After a week's break, III-Dach will start a six-week parallel operation with corporate customers actually originating EFTS items through their banks.

## IBM Extends S/3 Line With Model 12 Addition

(Continued from Page 1)

members of the IBM 3270 family on the System/3 models 8 and 12 and up to 30 3270 CRTs or printers on a Model 15. This eliminates one of the major handicaps often cited for the systems — that of not having enough terminal capability.

The terminals, which can be either CRTs or printers that range in speed from 40 char./sec to 155 line/min, are attached directly in high-speed mode at distances up to 2,000 cable feet from the CPU.

### Price Cuts

Purchase prices on the older core memory System/3 models 6 and 10 were dropped approximately 15%. IBM also extended TAP coverage, which was instituted with the announcement of the System/32, to the models 8, 12 and 15.

This three-year lease arrangement offers lease price about 5% lower than the Monthly Availability Charge (MAC).

A typical System/3 Model 12 card system has a purchase price of \$125,936, a MAC of \$3,458 and a TAP of \$3,234.

A typical cardless system has a purchase price of \$127,506, MAC of \$3,496 and TAP of \$3,230. First shipments are scheduled for June 1976.

The Local Display Adapter will cost about \$211 to \$322 MAC for the models 8 and 12 and from \$7,480 to \$11,695 for purchase.

The price of the Model 15 is now \$284 to \$617 on MAC and \$10,689 to \$23,334 for purchase. It will be ready in January.

## TV Watchers Back Price Marking

(Continued from Page 1)

expected to hold hearings this month on a bill to require price marking nationwide. The House is considering a similar measure.

In other results, 36% of the letters expressed the feeling that the consumer will be more aware of prices and will be able to shop more economically if prices stay on merchandise.

"Supermarkets will not be able to sneak price increases through" was a common sentiment.

Another 35% of the letter writers felt

"big business" is profiting at the expense of the consumer, in this case.

Other widely held opinions were that shelf markings will be wrong in many instances; the price will vary between the shelf and the checkout; and the scanner will move so fast that mistakes will not be picked up until the shopper is at home, if at all.

Resentment "at the introduction of the computer into another area of human existence" was expressed by 9% of the writers.

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### Dishonest Workers, Fire Also Cited

# Incompetency Seen as Major Threat to Data Security

By Catherine Arnst  
Of the CW Staff

ATLANTA — Data security must be attacked in a rational, systematic way if it is to be at all effective.

This warning was given by Robert Courtney, manager of data security and privacy at IBM, at the recent Data Processing Management Association conference here. The problem must be defined first, and a company "shouldn't spend a single nickel" on security until it is defined.

Courtney said the major security problem is incompetence. "Dishonest people will never catch up to the damage done by incompetents," he said.

He illustrated this point with numerous examples. One classic case involved a company which found it had the same \$18 million surplus at the end of the year as it had the year before.

In second place for the causes of security breaches are dishonest employees, according to Courtney. In 1974 he saw 339 cases of fraud or embezzlement using a computer, and 85% of these were not reported to the police.

"Thus the threat of prosecution is not there" for such crimes, he conjectured.

Only 20% of the 15% reported to police ended up in jail, making the odds for this happening 33 to 1 in favor of the criminal, he added.

There was not one instance where internal auditing caught the crime, he said, making "a vital corporate control out of place; auditors have fallen by the wayside as a means of data security."

A high level of competence was not

needed for these crimes. For the most part, "they were simple jobs done by people who already had access to the data. Consequently, "strong access controls only limit the amount of damage," but do not eliminate it, he said.

The third greatest threat to data is fire, he said, adding there is a tendency to place "all fire-quenching equipment where the most dollars are, rather than where the most flammable material is located."

He gave the example of a company which spent \$180,000 installing fire-extinguishing equipment in its computer room, but had no fire-prevention equipment in the cafeteria's kitchen, which was directly underneath.

"All it did was spend \$180,000 exercising its option to bake instead of fry," he

said.

In fourth place is the disgruntled employee, Courtney claimed, and although loss from this type of employee is infrequent, it is usually extremely expensive when it does occur.

Water from broken water pipes or leaking roofs is the fifth largest threat to data security. Courtney said if a company would spend \$15 for a roll of plastic film, it would be protected from this danger. He lamented, however, that only 10% of all data centers have such a roll in their facilities.

People outside the company gaining access to data is less than 3% of the problem, Courtney said, but added this category seems to get the largest amount of attention.

The best thing for a company to do in

the area of data security, according to Courtney, is to do "a good, solid risk assessment. It's hard work, but the payoff is real."

To do this, a company should list all its data sets with six columns after each for the security risks mentioned above. The company should then enter into each column the dollar impact of that happening to each separate data set and the probability of it happening.

In this way, a company can find its weakest areas and proceed to fix security through device and personnel identification, access control, auditing or system integrity.

Courtney asserted that, to him, integrity means freedom from surprise. "Data has integrity only when its no worse than expected," he said.

## Long-Range DP Plans Should Focus on User

By a CW Staff Writer

ATLANTA — A long-range plan for computer usage must be the end user's plan and not that of the DP department, John Soden, a principal with McKinsey & Co., a management consulting company, told attendees of the recent Data Processing Management Association conference here.

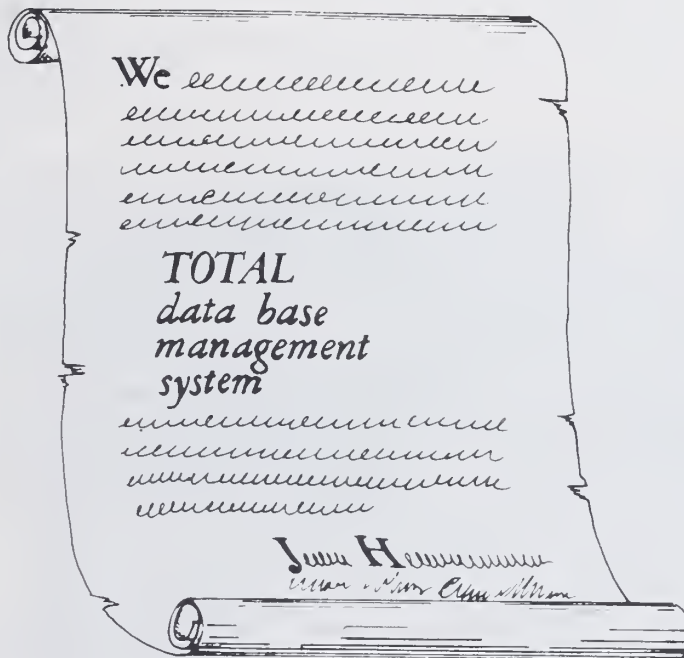
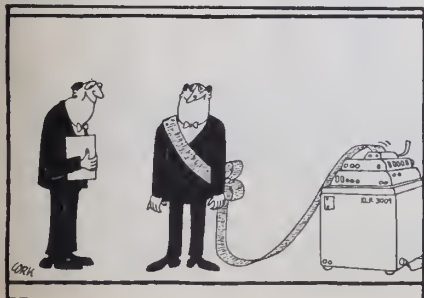
Soden noted such plans should be "user-oriented — and should use existing corporate terminology, not DP jargon."

Calling on his audience to "recognize the growing need for formal planning" and for communicating with top management, Soden said long-range plans should consist of several small steps, not "great leaps forward."

In assessing the applications on a computer system, Soden also suggested users should "consider the great leap backward." Many systems are overloaded with meaningless tasks that can be removed, he explained.

In interviews with several users, McKinsey & Co. found general agreement on the above concepts, yet anywhere from 40% to 80% of the users ignored their own advice, he added.

A long-range plan must be tailored to reflect the type of company it is serving, as well as the charter and the role of the DP organization, he said. It should also reflect the "maturity, sophistication and enthusiasm" of the company, the end users and the DP organization, he said.



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## Cbema Official Sees Responsibility as Key To DP Professionalism

By Catherine Arnst  
Of the CW Staff

ATLANTA — Data processing will "begin to be a profession when we can turn to our bosses and say, 'We shall not do it this way' . . . Professionalism means exposing yourself to personal responsibility," according to Oliver Smoot, vice-president of the Computer and Business Equipment Manufacturers Association (Cbema).

"We aren't a profession at any level. However, public pressure to become one is increasing and [the public] won't wait long for us to do something," Smoot told a session on "Making Computers Safe Through Professionalism" at the recent Data Processing Management Association (DPMA) conference here.

He gave several reasons why there is a need for DPers to "do something."

"Computers have obviously changed from a secondary item used in the background to something that interfaces with us every day," he said. About 90% of all applications involve personal involvement.

"A secondary occurrence is that computers are being used increasingly in areas where human lives are directly affected, such as air traffic control," he added.

Smoot believes the Society of Certified Data Processors' licensing proposal [CW, Dec. 11] brought the entire issue to a head, along with the recent federal privacy law. However, he is opposed to the licensing approach.

Instead, Smoot proposed that DPers push for better educational opportunities and enforcement of ethical standards within the industry.

Licensing would be inappropriate, he said, because data processing is not a profession in the same sense as law or medicine. He defined a true professional as someone who "is never hired — he is retained, consulted, etc. He should have almost complete control of the work he does for a client."

A professional's work should be considered intellectual, learned, practical, organized within the profession and altruistic, he added.

With the rapid advances in technology, he said, it is becoming easier and easier to get the job done by knowing less and less technology.

"The DP person is employed, not hired as a consultant. We should be teaching the DPPer about the user, or the user about DP," he said.

Those attending the session were eager to discuss the issue and repeated the arguments most often heard in relation to professionalism and licensing.

Some espoused strengthening the Certificate in Data Processing exam, while others claimed both certification and licensing were meaningless. "I own a marriage license, but that doesn't mean I'm a good husband," one attendee remarked.

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## Editorials

### *An Individual Decision*

The recent price cuts on purchased equipment from IBM make it more attractive for users to consider buying IBM equipment. It is easy to speculate on IBM's motives in making these price reductions, but one effect is that the ratio of lease to purchase prices is now lower than ever before.

According to industry sources who watch these kinds of statistics, it is now possible to rent certain IBM terminals for about 33 to 37 months and pay an amount equal to the purchase price of the unit. This low a multiple will obviously make it much more attractive for users to buy their terminals instead of leasing them.

The normal ratio for IBM equipment is described by industry sources as the "upper forties and even into the fifties [months]" with the independent suppliers typically setting their lease/purchase ratios at about four or five months below IBM.

In the past, IBM has lowered purchase prices toward the end of the life cycle on its equipment. But the latest reductions include some of IBM's hottest sellers.

In a time of tight DP budgets, users have to carefully analyze the trade-offs between leasing and purchasing equipment from any vendor. On purchases, the benefit of the investment tax credit and tax depreciation may outweigh the flexibility associated with leases.

On the other hand, purchasing equipment does not make sense if there is any doubt the units can meet a firm's needs at least for some period into the future.

The user must be both a technical and a financial analyst. He should not be interested in whether IBM is trying to increase its cash flow by dropping purchase prices. Instead, he should carefully map out what his equipment needs and goals are. Once that has been determined, he can act accordingly. Each decision will be different.

### *The Message of Catamore*

The decision in the IBM vs. Catamore case [CW, July 9] bears an unprecedented message for users who have been promised capabilities that have never been fulfilled.

The decision demonstrates that a vendor cannot make claims about improving a company's profit picture if those promises cannot be delivered.

A central issue of the suit involved IBM representatives who convinced Catamore's top management they were more than CPU salesmen. IBM attempted to convince Catamore its salesmen were actually experts in Catamore's particular business, which happened to be jewelry.

It is a common tactic for IBM to represent to management that its salesmen should be regarded as expert consultants, rather than mere order takers.

There are few products which so completely affect the corporate bottom line as a computer. And a user — especially a first-time user — may attach unreasonable expectations of capabilities to his system, depending on the representations made by the vendor.

If those expectations and capabilities are not forthcoming in a reasonable time, the customer may have grounds for bringing suit against the vendor. In other words, no more outrageous data, just reality!

## Letters to the Editor

### **Not Necessary for Manufacturers To Be Active in All Areas of DP**

I read with some interest Herb Grosch's comments in his recent columns concerning the viability of Xerox Data Systems Division, NCR, et. al. in the computer industry.

First of all, I still am not overly impressed with the superminiaturization, superstorage kind of computer. With the limiting factors of the speed of transmission of electrical impulses and the problem of dissipation of heat in miniaturized systems, I believe the future of computing lies in distributed systems.

I am not enamored with the computer utility concept. I have not seen economies of scale demonstrated.

Concerning Xerox R&D, I don't believe it's necessary for all computer manufacturers to carry on research in all areas of computing. The only company I am aware of that does this is IBM, and I haven't seen any really exciting technological advances from it since the 7094. I am particularly unimpressed with its latest announcement: "Son of Data Cell."

In addition, I recently read an informative article in *Business Week* concerning "the office of the future," mentioning a very small, perhaps even "ultrachip," computer being developed at the Xerox Palo Alto Research Center.

Xerox is a leader in distributed processor architecture and in operating system design and has what appears to me to be a reasonable R&D plan.

NCR has enjoyed considerable success in installing accounting machines and converting these users to the Century series, as well as installing a fair number of Century systems. I am not concerned it is not working on a super computer.

Having studied and observed the computer industry for some eleven years and talked to and listened attentively to Grosch, Captain Hopper and others, I have seen nothing but incremental growth in the industry. I wait with bated breath the great leap forward in 1976-78.

R.F. Littrell

Raleigh, N.C.

### **Cobol Report Writer Means Help**

I object to *Computerworld's* publication of Ken Seidel's tongue-in-cheek polemic against the Report Writer (RW) feature of Cobol [CW, July 2] as though it were a serious commentary on that much-maligned language.

Naive, innocent Cobol programmers are very likely to take Seidel's remarks to heart and forever exclude Report Writer from the garden of their dreams.

As Seidel knows very well, Report Writer is one of the very few facilities in the Cobol language which is problem-oriented (the SORT statement is another).

Cobol programmers need all the problem-oriented facilities they can get.

David A. Nelson

Moorestown, N.J.

### **Name 'Report Writer' Inaccurate**

I cannot explain to William B. Simmons [CW, June 18] why there is such widespread prejudice against the Cobol Report Writer facility, but I am in total agreement with him.

The Report Writer is an invaluable part of the Cobol language. It reduces coding time and standardizes an installation's print programs.

The typical arguments against it cited by Simmons — "inefficient" and "too much core" can often be used against an individual programmer's method of writing print programs.

These arguments also were (and still are) used against the basic Cobol language. Nonetheless, most people do not now see fit to use ALC to increase efficiency and reduce core usage.

Typical printer processing in Cobol is relatively primitive compared with other forms of I/O. Programmers do not have to block or deblock records, keep track of volumes on multivolume files or process standard labels on tape and disk files, but they have to count lines, worry about page overflow and update page counters when printing a report.

The Report Writer takes care of all this trivia for the programmer. In my opinion, comparing the

Report Writer to "normal" Cobol print procedures is analogous to comparing use of standard access methods to "EXCP" coding.

Perhaps the problem is in the name. "Report Writer" reminds one of some file management package. A better name would be "Extended Printer Support" because that is exactly what it provides.

D.B. Brim

Atlanta, Ga.

### **Incompetents Create 'Hot Spots'**

In Alan Taylor's column in the July 2 issue of *Computerworld*, he comments on a mixup between 3 ounces and "30 Z."

To determine a unit price, it is necessary to know there are 16 ounces in a pound, two pints in a quart, etc. Without this knowledge, the "patch" Taylor takes twelve paragraphs to condemn couldn't be written at all.

For a program to calculate unit prices, it has to be able to recognize symbols like "lb," "oz," "fl oz," "pt," "qt," "gal," "doz" and the like, so it may select the proper conversion formula. In a competently written program, Taylor's "hot spot" cannot exist.

It is sad to think people like Taylor have to stoop to assist "programmers" on this level.

Lee Lance

Los Angeles, Calif.

### **One Concise Sentence Says It All**

It seems Alan Taylor, in his recent column, "Checks Help Stop Errors Occurring in DP Hot Spots" [CW, June 18] could just as easily have said, "Edit your input, dummies!" That would have saved readers wading through approximately 30 column inches of material to get his point.

Paul J. Wilezynski

Brockton, Mass.

### **Aussies Don't Fear Unionization**

I'm writing in reference to the article in *Computerworld* April 2 entitled "Unionizing Aussies Bad Business Move" by Kenniston W. Lord Jr.

Despite Lord's recent travels in Australia, only some of his facts were correct. The implications he drew were extravagant.

Unions as such are not feared by either employers or employees — they have been a significant part of the Australian social fabric for almost a century.

The prospect of DP employees being under the direction of an irresponsible union is alarming. Lord's presentation was cataclysmic.

The Australian Data Processing Employees Association's (Adpea) constitution ensures irresponsibility in its decisions will not be possible.

All significant decisions which affect members must be decided by a full vote of members. Those members, all DP employees, ensure an attitude of total responsibility to the DP industry is maintained.

Despite Lord's presumption that data processors will be unionized before too many weeks have passed, the issue is not yet settled. The Federal Conciliation and Arbitration Commission has not decided which union has hegemony over DP employees.

The Federated Clerks Union which, with uncharacteristic temerity but characteristic illogic, described programmers as coding clerks has the inside running at the moment.

However, we are confident the commission will see the wisdom of having a computer union for computer employees.

Lord's estimate of 10,000 "data processors" in Australia was understated. Nancy French's estimate of 30,000 in the same issue was more accurate.

Of those 30,000, many will choose not to join a union. Should our DP union be successful in the current judicial battle, we will ensure that the joining of this union remains strictly the employee's prerogative and that the union serves only as an industrial tool of computer employees' aspirations.

The ogre-like picture Lord painted of all unions is not a reality in Australian DP.

Anthony Doyle  
Secretary

Adpea  
Blacktown, Australia



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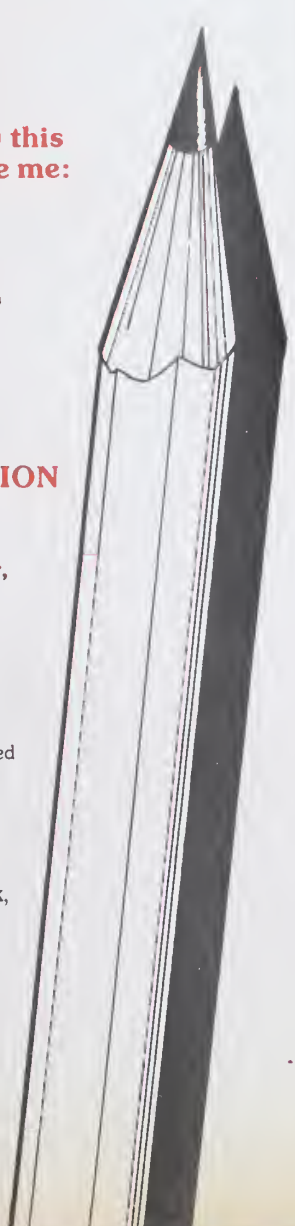
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## Letters to the Editor

### Proposed Standard On PL/I Too Abstract

The Computer and Business Equipment Manufacturers Association (Cbema), acting as the secretariat for American National Standards Institute (Ansi) Committee X3, has issued the draft proposed Standard for PL/I [CW, April 9].

To my knowledge, this standard has been in preparation since IBM first issued PL/I in 1964.

Cbema publicly stated "The PL/I standard has been worked on since January 1969, is now 380 pages long and has entailed six meetings a year with at least 25 persons at each meeting, with one of those held in Europe. Estimated committee travel, lodging and related costs to date are over \$500,000."

The definition consisted of a single algorithm expressed in a uniform metalanguage; this metalanguage is also defined in the document.

Standards have two basic requirements:

- They should be understandable, for, if they are not, they will not be useful.

- They should be precise, for, if they are not, they will be ambiguous and thus will not represent a single standard.

The proposed PL/I standard moves so far toward abstract and algorithmic statement and so far from the common English language as to make it virtually incomprehensible unless one first learns the special metalan-

guage created just for this standard and then studies the entire document in detail, almost without reference to any prior knowledge of PL/I.

That is, in their effort to achieve precision, the authors of this standard have chosen to make great sacrifices of comprehensibility.

The standard will not be subject to the kind of review a language should be if its method of expression is so opaque and convoluted as to be inaccessible to most potential users.

The standard simply will not be used if it is incomprehensible. It will be approved on the basis of faith that those who prepared this incomprehensible work knew what they were doing, can be depended upon and have actually created a document which, like the Emperor's clothes, although invisible, must be beautiful.

If the PL/I standard is issued in this form, it will set a precedent for other language standards which will then be prepared in equally difficult-to-understand form.

I suggest those who are concerned about such matters obtain a copy of the draft from Cbema, determine whether they agree or disagree with this position and communicate their comments to Cbema or to the standards organizations which represent them or their organization to Ansi. The identification of the standard is BSR X 3.53, Basis/I-12, February 1975.

Eric A. Weiss

St. Davids, Pa.

## Checkup Time IV

The second of the Japanese combines, Nippon Electric/Toshiba, seemed to me in Munich in spite of its growing share of the home market to be at the mercy of Japan, Inc. (as embodied in the Ministry of International Trade and Industry, or MITI). Because the underlying companies had the Honeywell and General Electric licenses from the '60s, their concatenation by MITI had obvious appeal, but the value of American technology from Honeywell has now dropped so low that Nippon Electric would do better to be put in with Fujitsu and Hitachi, so as to benefit from purely Japanese development and from the link to Amdahl. I believe MITI will do this, and before the end of 1978.

Let me skip ahead here and say that the Fujitsu/Hitachi combine looks like the ultimate survivor on the Japanese and on the world stage. I predicted they would not be put down before 1980, and this will be even more certain if the strength of the other Japanese computer companies, and of Nippon Telegraph and Telephone, were added to the final enterprise. Still, keeping up with IBM beyond the end of the decade (December 1980) looks out of the question.

And that, returning to the 1978 scenario, left Univac and Honeywell. I thought much better of Honeywell, and worse of Burroughs, in 1971 than I now do. I'll be very much surprised if Honeywell doesn't make an explicit exit this year, 1975.

It has sold off its peripheral leverage with Oklahoma City and cashed in its control of Bull. All that remains is for it to turn over its customer base to Univac, à la RCA, and go back to thermostats. Even the flechette bomb market has dwindled lately, thank Heaven! Caught in the end-of-a-hardware-cycle period, which produces rentals rather than sales, at a time when interest rates were out of sight, Honeywell has had an atrocious cash flow problem, I look, reluctantly, to

its disappearance some three years earlier than my original prediction — balanced by the longer Burroughs span.

Finally, I said Univac would bite the dust in 1978. It has done very well with minimum new technology; stung badly by thin films in the 1107, it has extracted the absolute last drop of juice from third-generation componentry. I admire its ability to adjust to IBM's victories; I liked my 1108 shop in Gaithersburg under Bruce Ramsay. Still, wishes aside, is there the money to make a really major new family, perhaps IBM-compatible — post-1976 IBM, that is — for delivery not later than early 1979? I have to doubt it, just as I doubt the durability of Burroughs in the big-machine business after 1978. Sure, someone has to build big data bank machines, super number crunchers. I have a candidate: IBM!

Earlier on, I quoted from "The Tempest." Let me close by doing it again, and from a nearby passage. It saddens me to do so. I think of myself not as a skilled futurist so much as one who is willing to admit the realities of a fantastic business. And of the poor dumb competitors, I say with Shakespeare

*Our revels now are ended, These our actors,*

*As I foretold you, were all spirits and Are melted into air, into thin air . . .*

How sad! It need not have happened; even now it could be avoided. But I doubt that it will.



Herb Gross

## 'Hot Spots' Built Into Airline Reservation System

Another case of a "hot spot" being built into the system design of a computerized information system was found by a reader, Jerry Matlin. When he phoned United Air Lines on June 7 to confirm his reservation for the next day from Norfolk, Va., to Minneapolis, he found he did not have one, although he held a ticket with an "OK" reservation.

Moreover, he was told there was no room on any flights that day.

The reason the originally scheduled flight had been canceled was that a week before Matlin had canceled a short flight (Raleigh to Norfolk), which was the third part of Matlin's four-ticket Minneapolis-to-Minneapolis trip (see box). This had triggered the cancellation without notification which aroused his annoyance.

Matlin had booked through United because, while he was only flying one leg of his trip with United, he was being joined by his wife in Norfolk on May 30 and was flying back with her on June 8. United would know this and also that he had in fact flown to Raleigh from Minneapolis on schedule.

With this information, Matlin argued there was enough likelihood of his using the United-issued OK reservation ticket for United not to cancel his reservation unilaterally. Several facts support this argument:

- The time between the Matlin-canceled reservation and the United-canceled

one. In this case, Matlin canceled a May 30 flight, while United canceled a June 8 one. The time lag was eight days, which certainly gave Matlin the time to make it possible for him to go from Raleigh to Norfolk. If the time had been, say, an hour or even a day, Matlin said, the situation would have been different.

- The fact that it was booked as being a family trip and that his wife had flown down on schedule. Matlin argued that here again was data which should have been checked and which did not make it so likely he would not be using the reservation that United had the moral and legal right to try to sell it to someone else.

### Results-Oriented System

The system design "hot spot" Matlin encountered is rooted in the real function of the reservation information system.

This function is not to provide accurate and reliable information, as is that of systems such as the new combined Stock Exchange ticker-tape.

Airline reservation systems are, instead, designed for the primary function of filling the maximum number of seats on airline flights.

When the two functions work together, as they generally do, the results are good. Occasionally, however, the two functions — filling seats and giving reliable information — are in opposition to each other. In such cases, hot spots develop unless they are taken into account in the system design.

In all the major airline reservation systems, the need to fill seats has resulted in having to design "garbage in, garbage out" (Gigo) systems, which accept unreli-

able input and offer unreliable output. This, in turn, has resulted in the adoption of arbitrary rules (such as the automatic cancellation of onward legs after a cancellation). These arbitrary rules then operate to cause annoyance, even though they are necessary simply to keep the system in operation, despite the unreliability of both its input and output.

The input unreliability comes from the fact the airlines think accepting a passenger's word for when he is going to travel without having any "no show" penalty is financially worthwhile.

That is an airline decision, although it is certainly approved by the government agencies.

Coming from this acceptance of unreliable input arises an "accepted" need to provide unreliable output, in the form of overbooking, etc.

The reservations system, then, has been transformed from an information system into a sophisticated forecasting system that currently permits an airline to cancel out a passenger without telling him, so the airline can then put up his "reserved" seat for resale.

### Proper Use, But . . .

Well, such results-oriented systems are a reasonable use of computers, although it is unfortunate such systems are disguised as being "reservation systems" when they have the right to cancel reservations.

However, that is not Matlin's complaint, and it isn't the hot spot.

The hot spot is in the techniques used to decide when to cancel, not in the right of the system to cancel at all. Matlin argued — and I agree — the rules are simply too arbitrary.

I think Matlin has some good points

### The Matlins' Itinerary

#### Mr. Matlin

May 29 — Minneapolis to Chicago (North Central)

May 29 — Chicago to Raleigh (Delta)

May 30 — Raleigh to Norfolk (Piedmont)

#### Mrs. Matlin

May 30 — Minneapolis to Norfolk (United)

#### Mr. and Mrs. Matlin

June 8 — Norfolk to Minneapolis (United)

The itinerary above was booked with United Air Lines, and tickets for each separate leg were issued by them with OK Reservation status. When Matlin canceled one short leg — Raleigh to Norfolk — the system canceled both this and the week-later June 8 leg. Matlin feels this is poor DP design.

here. The hot spot he has pointed out will certainly persuade people who are hurt or inconvenienced by airline reservation system cancellations to think themselves hurt by "inhuman computer systems."

There is the real hot spot, and I believe this hot spot should be considered in airline reservation system design and in other operations.

What about it, United?

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*A sloped keyboard, a sharp, bright display panel and quiet operation are some of the human engineering factors enhancing 3760 productivity.*

# New IBM data entry system helps operators work faster with greater accuracy.

A high-capability data entry system which reduces the required number of time-consuming tasks performed by the operator has been announced by IBM. The system can result in savings in the costs of data entry, an area with a heavy concentration of data processing personnel.

The system features IBM 3760 Dual Key Entry stations operating with a 3791 controller, which is linked to a System/370 virtual storage computer via direct channel attachment or data communications lines. It can relieve the operator of various entry, editing and verification routines. This makes possible fewer keystrokes per transaction and greater operator productivity.

## Improved error correction.

Accuracy can be improved through automatic checks and edits which can detect many errors at the time of entry and flag them for the operator. Fewer errors reach the computer, reducing costly correction time.

Data editing and checking capabilities are provided at the 3760 key entry stations, each of which accom-

modates two operators. As material is keyed from source documents, the operator is guided and prompted by an easy-to-read display panel. Other operator-oriented features, such as quiet operation and line-of-sight design, reduce fatigue and contribute to high keystroke rates and productivity.

## No intermediate media.

The new data entry system operates offline for data entry and online for data transfer. Keyed transactions are recorded on disk in a nearby IBM 3791 controller, ready for computer entry. This makes intermediate media such as punched cards, diskettes and tape unnecessary, resulting in improved data handling and throughput and creating the potential for significant cost savings.

Up to 24 keyboards can operate concurrently with one controller, which handles such tasks as formatting, editing, checking and error correction before data is transferred to the computer. There is virtually no need for special data entry programming.

## Expanded supervision capability.

The system allows the key

entry supervisor to monitor jobs in progress and formats being used. Production statistics, reflecting throughput by jobs and by operators, are also available to the supervisor.

Security features of the 3760 include passwords restricting access to system functions and limiting files to authorized personnel, and optional keylocks. The supervisor can retain positive control over all work at all times.

## Efficiency through SNA.

When data is transferred to the computer, the 3791 controller operates as part of IBM's new System Network Architecture (SNA). The SNA family of hardware and programming allows terminals with different functions to be part of the same network, use the same communications lines, and access a variety of application programs in the host system. This can mean greater flexibility in the use of data communications networks and terminals, while reducing line costs and computer overhead.

Because of its potentially significant contribution to data entry productivity, the high capability 3760 can be cost-justified for many centralized keypunch departments, both local and remote. For an evaluation of your present operation, and for full information, consult your local IBM Data Processing Division office.

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*Source documents can be placed in the line of sight with the display panel, a convenience for the operator.*

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## Key Word 'Has to Be Balance'

# Optimization a Question of Finding Best Trade-Offs

By Don Leavitt  
Of the CW Staff

RICHMOND, Va. — Optimal use of a computer system varies from site to site and the basic problem facing any user planning system optimization efforts is one of trying to make the best trade-offs, according to Gordon Patterson of The Computer Software Co.

Speaking at a recent Edos users conference, Patterson said managers can optimize for storage, CPU cycles, channels, disk space, operational ease or throughput. These sometimes are contradictory goals, he admitted, and the key word "has to be 'balance.'"

Operational ease was singled out for special note by Patterson before he got into the technicalities of saving core, cycles, disk space and other system resources. He said he agreed thoroughly with the person who called poor operator facilities "the silent killer of many good systems."

The operating system supervisor can often be trimmed of features that seemed useful or just potentially useful at first, but which are rarely used. Support for Ascii is one such feature, Patterson said, "unless of course you are running com-

munications with Ascii coming directly into the mainframe."

Data for the actual vs. allocated comparisons is in the Job Accounting module output. But, he admitted in answer to a question from the floor, the statistics captured by the module are not particularly accurate in situations with dynamic core allocation.

Sorts and "every PL/I program in the world" are among the "situations" in which Job Accounting is not as good as it should be, he pointed out.

### Single Buffering

Within their programs, users should consider single buffering of I/O areas, Patterson thought, noting there might be substantial core savings without impacting the performance of the program.

Even using a double-sized single buffer in lieu of two smaller ones might be a good move because it would cut back on the I/O operations, even though it doesn't save memory, he said.

Reblocking of files also came high on Patterson's list of CPU savers, since it would leave more of the cycles available to application logic instead of shuffling data in and out of memory. Elimination

of the Seek Separation feature in the supervisor would also save CPU cycles, he noted.

Users can do a great deal to unload overworked channels by utilizing a Blocked Fetch of program modules from disk and by using almost any of the techniques available to make heavily used system "transient" routines core-resident.

The Error Log might be another expendable, he said, adding that if the user never refers to the data collected by the logging, there's no point in maintaining it. If it really were required, he reminded the users, this would not be an optional part of the system.

The Interval Timer is another feature that is in many systems, but is useful only when there are time-driven programs being managed by the system. Seek Separation is still another capability that can be useful in some situations, but it doubles the number of I/O interrupts and is useless in single-thread operations, Patterson said.

DASD File Protect was included in DOS "in response to a government requirement," but it provides little if any real protection. Sysfile fared somewhat better in Patterson's analysis of supervisor ex-

pendibles, but he noted this feature is "of limited use without spooling."

Job Accounting has been a part of IBM's DOS for some time now, but this too can be costly unless the user is capturing the data being generated by the accounting module and then using the reports to charge costs back to the end-user departments, Patterson noted.

Users can save more core by being careful with partition sizes and trimming them whenever it seems reasonable. Just how much a given partition can be trimmed may depend on the memory actually used by programs in that partition, which is often quite different from the memory allocated for each application.

Redistribution of data files out on disk, including — if it seems wise — physical shifts from one spindle to another, is another way of saving core. Relocating data files to new locations on the same disk wouldn't help much in balancing channel loads, but shifting files from one disk to another could help considerably, Patterson said.

On the disk itself, bigger blocks would tend to make better use of available space, but trimming the Extents, or space reserved for any given file, might have a bigger payoff.

Extent trimming is tricky, he admitted, since the Extents have to be large enough to cope with anticipated growth of the file, or the system will lose efficiency through Extent Overrun conditions.

In any case, he warned, it doesn't make very good sense to put too many files on any given spindle. It may save space, but the demands on the access arm mechanism will shorten the life of the unit. An overused disk spindle was characterized by Patterson as a "one-armed bandit."

## Order-Processing System Works for Distributors

WALTHAM, Mass. — An on-line order-processing system developed jointly by Honeywell and Les Pharmacies Universelles Limitee of Montreal is tailored to meet the order-processing requirements of wholesale drug distributors and other large manufacturers and distributors with large-scale Honeywell installations.

Operating from an integrated data base of customer, vendor, product and other company files, the system provides order processing, inventory control, accounts receivable, accounts payable, sales analysis and other functions related to order processing.

Orders entered from CRT-based display terminals generate packing slips at printers either at a central location or remote warehouses. The packing slips can be used as invoices, or the system can print separate invoices.

### Displays Quantities on Hand

Quantities on hand are displayed for the order-taker and inventory is reduced automatically with each accepted order. When the inventory reaches or falls below the minimum order or other quantity established by the wholesaler, the system produces a purchase order.

As invoice totals are calculated, the customer's balance is debited. When payment is received, it is entered on-line and the customer's balance is credited.

When purchase orders are generated, the vendor file is updated with the orders. Upon receipt of the merchandise, the supplier's account is credited. After receipt of the bill, payment is scheduled and automatically issued.

### Allows Detailed Analyses

The system files and data are organized so that detailed analyses can be made. For example, sales by product, product grouping or supplier can be reported, as well as sales by customer, sales of products during promotional campaigns compared with normal pricing periods and warehouse velocity analyses.

Figures for the current reporting period, current month against the same month of the previous year and year-to-date accumulated compared with the previous year are available to the financial analyst.

The minimum configuration on which the system operates is a Honeywell Series 60 Level 66 or Series 6000 computer with 128K words of main memory, disk capacity sufficient to handle the user's data base, printer, card reader, tape drive, a front-end communications network processor, VIP 7700 display terminals or any Teletype-compatible terminals.

Software prerequisites include Honeywell's Integrated Data Store data base management system and Transaction-

Driven System which provides programming for handling a high volume of transactions.

The system is available in source code within 30 days after ordering. It has a bilingual capability which permits product data to be entered and printed out or displayed in French and/or English.

License to use the system may be purchased for a one-time charge of \$19,000 or for 24 monthly payments of \$920.

## Boole & Babbage 'TSA' Now Runs On Installations Under OS/MFT

SUNNYVALE, Calif. — The Total Systems Analysis (TSA) package from Boole & Babbage, Inc. (B&B) is now available for use under OS/MFT as well as in MVT and OS/VS environments, according to a spokesman for B&B.

TSA measures usage of each module in a system, spotlighting both highly used modules and active sections of module coding. It provides a means of measuring CPU activity, IBM's OS, Hasp, ASP, TSO, IMS and all application program modules from one central point, the company noted.

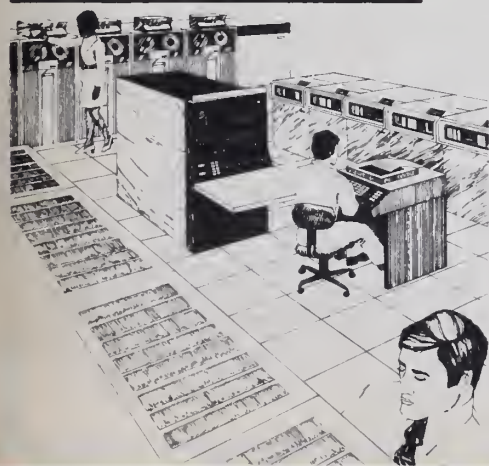
The user receives a measure of the CPU

overhead required by each module. As a standard feature, TSA will plot — over time — the activity of groups of up to four modules, B&B said.

The Problem Program Evaluator (PPE), already available as a stand-alone B&B product, is included in TSA as a standard facility to monitor application programs for heavily used sections of code. PPE allows the user to concentrate optimization efforts effectively, the vendor explained.

Written in Assembler and Fortran, TSA can be purchased for \$13,000 from B&B at 850 Stewart Drive, 94086.

## Musing of a DP Manager



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## Focuses on Disk/Tape File Use

### 'Dossier' Gets Report Writer Capability

PORTLAND, Ore. — Computer Concepts, Inc. (CCI) has recently extended the capabilities of Dossier, a package that reads program libraries and creates a data base from all the information IBM's DOS contains about programs and data files.

Functioning under DOS or DOS/VS, Dossier produces a basic report which lists all programs from any core image or relocatable library and gives a description of each file the programs accessed.

Program type, size, load and entry address are listed; so are

file names, access use, data format, record and block size and information about the devices involved.

CCI has now added a report writer capability which incorporates IBM's tape/disk sort/merge programs. It produces a report focusing on disk/tape file usage and showing programs that reference a given file, including an index section in record and block size sequence.

A track utilization report shows disk file alternative blocking factors and potential space

savings for current and planned disk devices. A core utilization report shows — optionally by partition — distribution of program sizes.

#### Additional Output

Other output from the enhanced Dossier is said to include a "Sys-number" usage report showing — again, optionally by partition — all programs which reference logical devices by Sys-numbers, and a device usage report showing all programs which reference a given device or device class.

Dossier can be used on any IBM 360 or 370 from a 32K 360/30 up through a 370/145 operating under DOS or DOS/VS. The package can be licensed for a one-time charge of \$780, but lease plans are also available, CCI noted from Suite 410, 6443 S.W. Beaverton Highway, 97225.

### 'System IV' Update Aids Personal Trust Accountants

KANSAS CITY, Mo. — Personal trust accountants have gained on-line entry and inquiry capabilities in OS or DOS-based IBM environments with a module recently added to the System IV package from Vaughan Computer Systems, Inc.

Developed for volume processing in a single bank or multibank installation, all input for System IV is made directly from the trust department using IBM 3270 display units interfacing with CICS/VS. Input is controlled by CRT-screen format displays and on-line editing, Vaughan noted.

At the same time, selected and structured contents of master files can be displayed on call. Displays include individual property master records, account master records, asset records, asset holdings and asset holders.

System IV manages generation of dividends, interest, redemptions, distributions and disburs-

ements. On a cyclic basis, it handles statements, reviews, distributions, payments, tax reports and reminders, the vendor said.

The package is capable of managing both batch sales and demand note accounting, as well as writing checks and providing descriptions of all transactions handled by the system.

Monitoring itself, the software also generates a system control summary and system processing statistics which, presumably, could be used to charge costs back to using banks.

Table-driven so that processing for each bank is tailored to its needs, System IV runs on VS-oriented IBM 370s with 3330 disk drives, CICS/VS and 3270 terminals. With the CICS/VS interface module, the package costs \$50,000, Vaughan said from 1417 United Missouri Bank Bldg., 64106.

#### Correction

Sometimes notes get scrambled when a staffer tries to cover four NCC sessions in one day. That apparently happened in Don Leavitt's report of the session on "Programming — Art, Science or Engineering?" [CW, June 4].

Ed Yourdon, and not Peter J. Denning, categorized the *New York Times* project as a "disaster." Since then, Denning has noted that the statement is "not one I would either care to defend or refute."

Denning, not Yourdon, spoke of subroutine "stubs" printing "Kilroy was here" on a console typewriter to show that execution of a top-down program had reached the routine even if the user's desired logic had not been completely developed.

And Denning, not a member of the audience, made the remark about "Release 17.9 of Beethoven's Ninth Symphony."

### Loader Hastens Work of 'Total'

ATLANTA — Administrators working with the Total data base management system from Cincom Systems can speed the process of loading data sets with Hyperload from National Computing Industries (NCI).

Described as a high-performance loader, Hyperload can build as many consecutive data sets as desired in one pass. It is "substantially faster" than conventional user-written load programs, NCI said.

Inputs to Hyperload are free-form keyword parameter-driven control cards which describe the data base, data sets, element lists and up to 255 linkage paths. Identity of the Total version being utilized is one of the parameters, so either Version 4 or 7 may be accommodated, a spokesman added.

#### Three Steps Eliminated

The control cards take the place of a more conventional three-step process. The user no longer has to append the 4-byte relative disk address to each logical record, sort the file into sequence by that relative address key and finally load the records with a custom-written load program.

Written in BAL, Hyperload requires approximately 50K and can be used with either the DOS or OS implementations of Total on IBM 360/370s. The NCI package does not interface with Total on any other mainframes.

Hyperload, available now, may be purchased for \$1,000 from NCI at 6075 Roswell Road, 30328.

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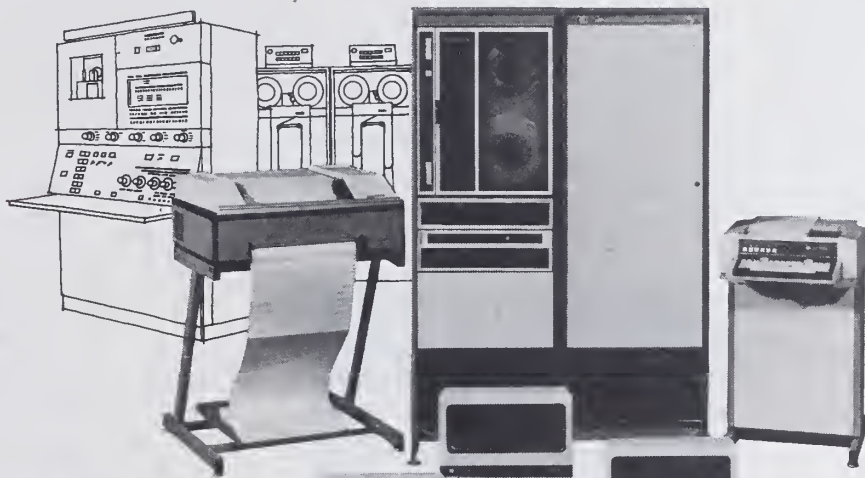
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## As Frequency Analysis Substitute

# Preprocessor Can Boost Rework Efforts

By Arne Rohde

Special to Computerworld

I agree with Lou Mills ["Program Rework Should Expedite Most Used Routines," CW, May 21] that frequency analysis can be a useful tool when optimizing program runtime. The effort required to find the frequency distribution of the events affecting the runtime of a program, however, quite often exceeds the benefits obtained from the resulting program changes.

This is because a great deal of the work in frequency analysis must be done manually, and frequency analysts are quite expensive people to have running around.

### Concepts and Techniques

For those willing to implement it, however, there is a method for performing a great deal of the work by automated means instead of by manual labor.

It is possible for a program to count the number of times control is passed to certain points in the program during its execution and then print these at the end of the run. Again, however, this means manually inserting the necessary statements to count the number of executions and to print the resulting list. With a suitable preprocessor, this could also be automated.

To take the example of a Cobol preprocessor, this could be implemented with three levels of complexity to cater to the different programs and the various levels of optimization required.

The first level would consist simply of

building up, in the working-storage section, a table containing the paragraph names of all executable paragraphs in the program, together with a frequency-counter field for each of these.

Immediately after each paragraph name, an add statement would be inserted to increment the paragraph execution frequency counter. Immediately before the STOP RUN statement, the coding necessary for printing out the table, either in paragraph or in frequency sequence, would be inserted.

The second level of complexity would consist of subparagraph designators in the table, together with add statements after each explicit or implied GOTO (conditional) which does not terminate a paragraph.

The third level of complexity would involve counting the frequency of each executable statement when it could differ from the preceding one (e.g., in IF condition Statement-1 ELSE Statement-2, the frequency of both Statement-1 and Statement-2 would be counted).

The results of running programs treated by such a preprocessor, using typical production data, would be of great assistance to a programmer about to optimize these programs, especially if no frequency analysis data is available. All too often one sees programmers proceeding sequentially through programs and looking for inefficient coding instead of finding the most frequently executed areas of the program and then starting by optimizing these.

To my knowledge, the preprocessor described above is not available from any machine vendor or software house. If it is, then I would like to know more about it; if not, then the idea is freely available to anyone willing to implement it.

I have also found, through optimization efforts on different hardware and various programming languages, that machine vendors are rather reluctant to give away too much information which could be of assistance to optimization efforts. To give an example, the Univac OS/4 Cobol Summary gives rules and suggestions for efficiency consisting of the following five statements:

1. Use legal abbreviations for reserved words to reduce compilation time.
2. Use relational operators instead of relational clauses.
3. Avoid needless qualification and/or subscripting.

4. With ADD, SUBTRACT, IF and MOVE:

- Use same size sending and receiving fields.
- Align decimal positions of sending and receiving fields.

5. Define subscripts and items of arithmetic expressions as COMP or COMP-3.

I realize the number of suggestions which can be given in a pocket summary must be limited, but let us then look at the value of these suggestions.

The first two points, together with the "qualification" part of the third point, I would consider completely worthless, since the extent of this usage in a program would have to be inordinately large for the results to be measurable.

I would consider the "subscripting" part of the third point valid if it had been rephrased as "Use indexing instead of subscripting when possible," since subscripting can be almost an order of magnitude slower than indexing for referencing table items.

Subscripts appear again in the fifth point; this could also be replaced with advantage by the suggested rephrasing of the third point. Otherwise I would consider it misleading, since subscripts should be defined USAGE INDEX instead of COMP or COMP-3.

Rohde is with Bang & Olufsen A/S, located in Struer, Denmark.



# There are two ways to convert to OS.

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## The 3790: A Glimpse Into IBM's Future Plans?

By Ronald A. Frank  
Of the CW Staff

With its latest terminal introduction [CW, July 9], IBM has given the 3790 communications system a completely new identity. The change provides one of the best glimpses of future IBM terminal systems.

The 3790 began life in early 1974 as a terminal system that did not seem to fit into the IBM pattern. It was reportedly designed with the assistance of the Hartford, Conn., insurance user community and had features which supposedly were desirable for this type of user.

The system relied then on the 3277 CRT as the terminal device; applications such as inquiry/response and, to a lesser extent, data entry were described in IBM literature.

One aspect that made the 3790 system different from other IBM terminal systems was the dependency which the system had on the 370. Special software was introduced which required that certain programs had to be loaded into the 3791 controller from the 370 mainframe operating in a Vtam/NCP environment.

These special programs included Program Validation Services (PVS) and Subsystem Support Services (SSS). PVS allowed the testing of 3790 programs at the host, and SSS was used to control 3790 program libraries. These software programs made the 3790 system significantly dependent on a host 370.

Now all that has changed. The 3791 controller is still there, but it has taken on a new role. In addition,

the application task of the system has been changed, and the 3790 has been given a new terminal device.

That terminal is the 3760, which includes two key entry operator positions with gas panel displays that have a significantly smaller screen capacity than the 3277. The 3760-based terminal system is now de-

### Analysis

scribed as suited for "high-volume descriptive data entry."

Gone are the earlier references to inquiry response and insurance applications such as claims processing. The pitch now is reduced keystrokes, easier error correction of records and all the other features that appeal to the data entry user.

And with simplified application capabilities, the price per terminal has dropped. Taking a four terminal system (which seems to be best for comparison), a 3790 with 3277 CRTs costs about \$374.75/mo per terminal under the monthly rental. The reconfigured system with four 3760s costs \$378.75/mo per terminal under the monthly rental.

But the 3270 CRT family was never included in the IBM 24-month Extended Term Plan (ETP). The same system with 3760s under ETP comes out to \$364/mo per terminal, or about \$10/mo less per terminal — at least in this particular configuration.

But the real change is in the 3791 controller and the way software is loaded. Gone is the dependency on the 370 mainframe. Instead, IBM said, an "IBM-supplied diskette provides all functional programming" for the 3791 to support the 3760-based data entry operation.

In addition, format definition is done from the 3760 to the 3791. The functional software is transferred from the diskette to the 3791 disk for system operation.

So the 3791 using its diskette, which we are told existed all the time, is now virtually a stand-alone remote device controlling the 3760s. When batched data is loaded into the 3791 disk, it can be transmitted to the mainframe site using a new Batch Transfer Program, which was described as an easy way to load the contents of the disk onto mainframe peripherals at the 370 site.

The reconfiguration of the 3790 may have been a reaction to user resistance. The system originally had a dependence on the mainframe, which users did not like and which apparently was unnecessary, thanks to the IBM-supplied diskette. In addition, the terminal CRT was too complicated for a high-volume application.

If IBM can keep the same basic 3791 controller and give a terminal system a complete identity change, how many other ways will it be able to reconfigure its terminals in the future? It seems clear that this is the first of many more such changes, with perhaps each configuration tailored to a specific application.

## Voice and Data Integration Seen as IBM Commitment

By Ronald A. Frank  
Of the CW Staff

BRIGHTON, England — IBM is committed to integrating the voice and data communications requirements of users — at least in Europe.

That was the underlying message in a speech given by J.H. Gallop, product manager for the IBM 3750 switching system in the UK. Gallop spoke at the recent Telecommunications '75 conference here.

As the need increases for a "multiple-function information station," management will seek ways to integrate voice and data capabilities.

### First Step

The first step toward this integrated solution is a push-button telephone with multifrequency signaling. The phone can be used for voice as well as data, even though the latter is limited to numeric form, Gallop said.

If the host CPU has a "synthetic voice generator as an output device, this audio response can be sent to the telephone and used as an output capability, he said. The phone then becomes "a terminal for updating the data base and for making inquiries on that data base," he said.

"If that telephone is connected to a private automatic branch exchange

(PABX), it can provide the essential voice functions. By providing a computer-controlled PABX, the switching system can determine whether the [message] is a normal telephone call or whether it is a data call," Gallop said.

A switching system such as the 3750 can use its own processing capability to perform some initial work on the data and to handle the response systems, he said.

Using the low-cost and widely available telephone, each desk or workstation can

have its own multiple-function voice and data terminal, he said. (The 3750 is not available in the U.S.)

### New Problems

As data base concepts have been adopted by management, new problems have arisen. If all of the data is now in a central data bank, it is essential that it is up-to-date and accessible, Gallop said.

"If these criteria are not satisfied, subsidiary files will be maintained at the user's desk" and the main data base will become less valuable. This is one reason

the user must have a terminal that can easily access the data base.

A number of European firms have already integrated their voice and data communications systems, Gallop said, and in these organizations the telephone "is being used as a means of person-to-person communication as well as person-to-machine."

Future development of digital voice transmission over the public telephone networks will bring about a further level of integration in the user's computer/communications system, he predicted.

## Terminal Proves Time-Effective Mini Peripheral

SAN PEDRO, Calif. — By using a high-speed keyboard/printer terminal as a peripheral to its minicomputer "mainframe," a systems consulting firm here has, according to its estimates, reduced by 20% the time to develop a complex aircraft simulation program.

Command Control and Communications Corp. is using the Memorex 1280 communications terminal, with an integral magnetic tape cassette on-line to a Data General Nova 2100 minicomputer, to facilitate loading, assembling and developing the simulation program.

"To the software, the Memorex 1280 looks just like a Teletype, only it's 12

times as fast. The magnetic tape is much easier to use than paper tape. It's neater and can handle a large-size program such as ours, which takes 32K of core," Michael C. McCune, senior systems engineer, explained.

The simulation program, developed for the government, involves generating large-screen color displays of aircraft situations in order to study military command and control systems. As many as 100 aircraft can be actively displayed at once, and maps and air traffic control data can also be screened.

The 1280 is basically the same communications terminal used with IBM

System 360 and 370 computers. It is compatible as a hard-wired console with major minis.

In addition to the lower price and easy hookup, the terminals operate at 120 char./sec.

"We were able to save about 20% in development time due to the speed and convenience of the 1280 over conventional Teletypes. I'd say it has already paid for itself," McCune said.

The 1280 tape cassette operates with an 8-bit code, compatible with a mini's object code. A user select switch allows the use of an 8-bit binary code or the standard 7-bit Ascii code.

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# Burroughs B776 Processor Controls Remote Networks

DETROIT — Burroughs Corp. has introduced the B776 system and communications processor, a remote communication system that provides the user with data communications and network management capabilities.

The B776 is suited for decentralized DP networks through its ability to control terminals locally or remotely, while concurrently accessing its own data files and/or communicating with one or more central computer systems, the company said.

Typical applications that can be handled by the B776 include communication network control, data collection, line and terminal data concentration and store and forward message switching. In addition, high-speed peripherals and data storage devices are available for the support of batch-oriented applications.

The Burroughs Data Link Control (BDLC) line procedure is available on the

B776 to enhance its application as a controller or concentrator in a remote processing network.

The B776 can communicate with all Burroughs terminal systems and Burroughs data communications-oriented computer systems. It can also communicate with other computer systems.

A feature of the B776 is its ability to have two separately functioning data communications processors. Each processor can handle up to 16 data communications lines which accommodate various transmission speeds and transmission modes.

#### Operating System

The B776 incorporates an operating system called the Communications Control Program (CCP), which controls the priority and scheduling of the message-processing program and the application programs.

All programming for the B776 is said to

be done in problem-oriented, high-level languages to allow for the development of self-documenting programs that are easy to maintain and adapt, as is required in the dynamic environment of most networks.

High-level languages which are available with the B776 include NDL, MPL, Cobol and RPG.

The NDL compiler allows the user to input simple statements describing the data communication environment and generate the code required for a custom network control program.

The MPL language permits development of message-processing programs to provide an additional level of control over messages entering the system.

The B776 can be connected to a broad range of input/output devices with varying speed ranges permitting the user to economically adjust his system configuration on site to accommodate changing

throughput requirements.

Prices vary according to the application and the particular configuration of the B776. A typical system, to be used as a data concentrator, would have a purchase price of \$68,230, with a monthly lease price of \$1,550. First deliveries of B776 systems are scheduled for the fourth quarter.

## Alaskan Camp Site, Oil Company Office Linked by Satellite

PRUDHOE BAY, Alaska — A communications terminal operating on Alaska's North Slope has successfully transmitted data, via satellite, to the headquarters of a major oil company.

The project was conducted by the oil company to determine the feasibility of transmitting data from a remote, 1,000-man encampment at the beginning of the Trans-Alaska pipeline to its headquarters.

In the first stage of the study, a Sycor Model 340 in Dallas communicated via a Western Union Telstar satellite to a Chicago earth station which retransmitted the data back to the same building in Texas for processing on an IBM System/370 Model 168 computer. A company spokesman indicated that there were no problems in the 4,800 bit/sec transmission.

The terminal was then transported to the camp in Prudhoe Bay, considered to be the largest potential oil field in North America. Operating in IBM 2770/2780 remote job entry mode at 2,000 bit/sec, the terminal transmitted 80-character length records using an RCA land circuit and the Canadian Anik satellite to an earth station at Dead Horse (Anchorage).

From there, the data was transmitted over leased microwave land lines through Canada to the company's offices in Dallas. A company spokesman said the transmission was "extremely clean."

In a third experiment, the company transmitted data via a satellite to Anchorage and used a second satellite to send the data to the Point Reyes (San Francisco) earth station.

From northern California, the information was sent over voice grade lines to the company's Los Angeles headquarters, via its microwave network, to Dallas.

## DMW Program Option Allows Optimization Of Multipoint Circuits

ANN ARBOR, Mich. — DMW Telecommunications Corp. has introduced a HiLo-75 program option which enables users to determine minimum cost-billing routings for multipoint circuits under AT&T's high/low tariffs, Telpak extension tariffs and Series 1000 low-speed data tariffs.

Coupled with HiLo-75's pricing and optimization capabilities for point-to-point lines, the package can be used to audit carrier invoices and perform various network design functions for minimizing network costs, the firm said.

HiLo-75 is offered on an outright sale or full payout lease basis. Either arrangement includes first year's tariff maintenance charges, with a contractual provision for maximum maintenance charges in subsequent years.

The software will run in batch or interactive time-sharing mode on any computer system with a standard Fortran IV compiler.

The program costs \$6,000 to \$8,000 with interactive data base and multipoint optimization options from DMW at 2975 Hickory Lane, 48104.

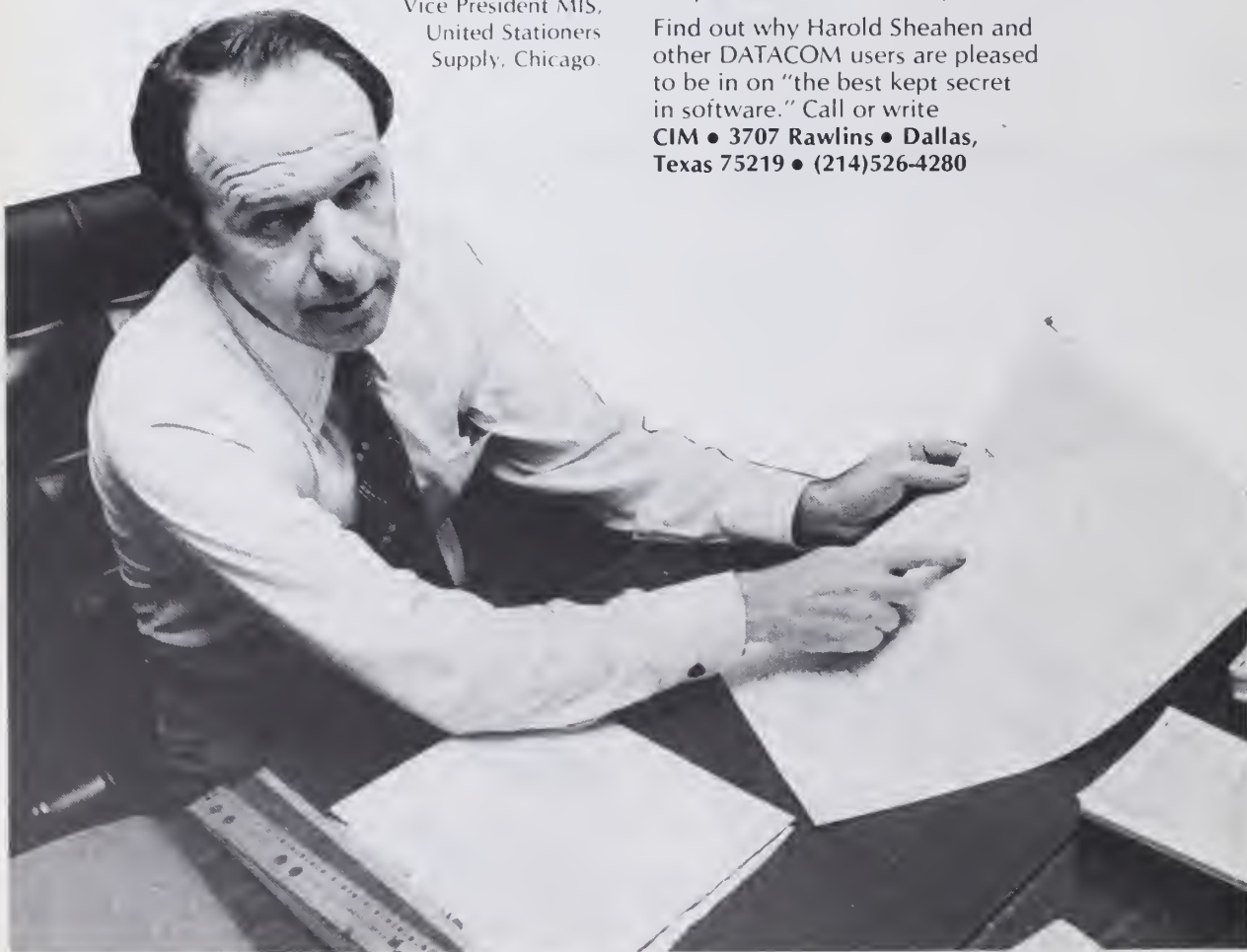
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# Atlanta 'Maps Out' Plans for Displays

ATLANTA — The City of Atlanta has a graphic display system from Sanders Associates, Inc. which will be used in a combined automated mapping program by city departments, local utilities and the Georgia Transportation Department.

Described as the first such cooperative effort in the country, the Atlanta project will provide a single, digitized map base which incorporates the combined map information of the Atlanta Gas Light Co., the City of Atlanta, Georgia Power Co., Southern Bell Telephone and Telegraph Co. and the state department of transportation.

At present, each participant maintains separate map files with gas lines, utility poles, etc. Each has varying scales, grid coordinates and updating frequencies.

The Atlanta project will digitize data from these maps, aerial photographs and other sources, store the data on two computer disks and provide a common

data base for immediate access and updating.

## Allows Interaction

The Sanders graphic system, which translates information from a processor into meaningful diagrams and alphanumeric information, will enable the users

## Terminal Transactions

to "interact" with the computer information.

The Atlanta equipment features two Sanders 530 21-in. graphic consoles with a keyboard and a Photopen device for entering and retrieving information from storage.

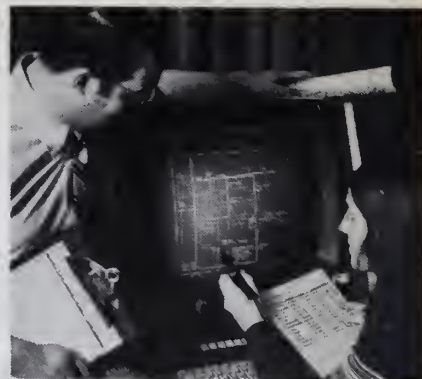
The system enables users to call up

stored data such as street maps, display it on the screen and electronically overlay other information such as utility lines, population figures, voting districts, census tracts, high-crime locations and other information.

This graphic data can then be printed out on a mechanical flat-bed plotter. In addition to providing up-to-date maps, the Atlanta system will also eliminate the numerous hours normally required to manually update the information.

The Sanders system also permits users to zoom in on the displayed data and enlarge a particular section for closer scrutiny. The system can also be used for numerous other applications, such as preparing graphs and bar charts showing budget planning and crime information to city officials.

In addition, the system can be used for automated architectural and engineering drawings, rights-of-way for the public



The Sanders Utility Mapping and Control System shows network distribution on a geographic base map.

works department, traffic signal locations, water distribution and other city tasks.

A typical system for any type of cartographic application includes a Digital Equipment Corp. PDP-11/35 with 32K storage, a Sanders 530 graphic display, 1.2M-byte disk, digitizer, line printer, plotter interface and full software support to build the necessary data base.

This costs \$115,000 to \$125,000, Sanders said. The Atlanta system uses a Varian V70 processor with 80K storage, but future systems will use the DEC processor.

Software support for the system includes the Sanders Utility Mapping and Control System (Sumacs) and interactive mapping software written in machine language and Fortran called Sanders Geographical Information System (Sagis).

## In Philadelphia, The Smart Money Is On The Smart Terminal:

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The PBW Stock Exchange recently installed America's first automated stock exchange trading system. The entire turnkey package, named Centramart®, was designed by INCOTERM, including the specifications for the mainframe and development of all the associated software.

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Naturally, INCOTERM Intelligent CRT Terminals are used throughout — to supply current quotations on all PBW listings as well as on the 4,000 companies of the AMEX and the New York Stock Exchange — and to automate all aspects of floor trading, order handling, reporting and clearing of stock transactions.

The system is designed around the minute-by-minute information requirements of the trading specialists. What was the price at the previous trade? In what quantity? What's happening on the various floors?

When a PBW transaction takes place, INCOTERM equipment prints out the associated paperwork. For the seller. And the buyer. And the stock clearing corporation. INCOTERM records the transaction on magnetic tapes for easy processing.

And for transmitting PBW last sale information to the tickertape.

PBW selected INCOTERM for a number of good reasons. Versatility. Efficiency. Imagination. And most of all, for the fact that INCOTERM gives Centramart the power to remain independent of the national system it will support.

The PBW Exchange looked at the long list of INCOTERM blue chip customers: banks, railroads, hotels, hospitals, airlines, manufacturers, and local, state and federal governments. Of all programmable equipment on the market INCOTERM has continually proven to be the best long-term investment.

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## HP Device Integrates GE Terminet Printer

PALO ALTO, Calif. — The 1,200 bit/sec General Electric Terminet has been integrated into Hewlett-Packard (HP) data systems as HP Model 2762B.

Maximum printing rate is 120 char./sec. Standard features include 120-column format, tractor feed and paper handler.

Switch selection of 10-, 30- or 120 char./sec fits the terminal to systems of differing speed requirements.

Standard interface is RS-232C (CCITT V-24), compatible with Bell 103 full-duplex modems. Hard-wiring is possible to any HP computer by way of available interface kits or multiplexers at speeds of 110-, 300- or 1,200 bit/sec.

Line control, an option, allows use of 1,200 bit/sec half-duplex modems such as the Bell 202C with HP multiplexers in disk operating system environments.

Options include answerback and vertical and horizontal tabs as well as line control (with interface for Bell 202 data set, allowing control of two-way alternate, half-duplex or full-duplex communications).

The Model 2762B is priced at \$5,865. Automatic answerback adds \$120, vertical tabs \$255 and horizontal tabs \$240. Line control and Bell 202 interface adds \$170.

An optional pedestal and restacking shelf costs \$210. Current delivery estimates are eight to 10 weeks, HP said from 1501 Page Mill Road, 94304.

## Digicom Data Coupler Helps Pinpoint Various Problems

CAMPBELL, Calif. — Digicom Data Products, Inc. has an originate-only coupler which features a seven-way diagnostic window designed to aid users in pinpointing various communication problems. Called the AC-300, the unit incorporates signal/noise ratio circuitry which is said to eliminate unwanted line and room noise, thereby securing error-free transmission.

The AC-300 operates at data rates from 0- to 300 bit/sec and is priced at \$245. A teletypewriter interface cable is available for \$20. The firm is at 280 E. Hamilton Ave., 95008.



## Bits & Pieces

### Using Optical Scanners

# Standard Bill Code Could Cut Input Costs

## Nylon, Film-Based Ribbons Outwear Conventional Types

GLEN COVE, N.Y. — The Mara-Film printer ribbons from Columbia Ribbon and Carbon Mfg. Co., Inc. are said to outwear conventional mylar-based printer ribbons.

Based on a combination of nylon and film, the ribbons can provide the wear of fabric with the crisp printout of film ribbons, the firm said.

A dozen ribbons costs \$38/ribbon from the firm at Herhill Road, 11542.

## Robins Adds Degausser

COMMACK, N.Y. — The Model R24024 degausser from Robins Industries is said to be capable of erasing 100 reels of half-inch tape in 15- to 30 minutes.

The unit will demagnetize reels up to 1 in. wide and 17 in. in diameter.

The Model R24024 costs \$240 from the firm at 75 Austin Blvd., 11725.

## Model 410 Cuts 120 Fiche/Min

VAN NUYS, Calif. — The Model 410 fiche cutter from Extek Microsystems will cut 120 4- by 6 in. positive or negative fiche/min, according to the firm.

The unit accommodates silver, diazo and vesicular films in widths from 2-1/2- to 5 in. and thicknesses from 2- to 10 mils.

The Model 410 costs \$3,485 from the firm at 6955 Hayvenhurst Ave., 91406.

## NMA Booklet Available

SILVER SPRING, Md. — The second edition of "The User's Guide to Standard Microfiche Formats" is available from the National Micrographics Association (NMA).

The 16-page booklet illustrates and describes the seven standard microfiche formats in use throughout the world.

In addition, the characteristics which are common to all formats are described, and a table of reduction categories for microimages is included.

The booklet costs \$2.00 for NMA members and \$3.00 for nonmembers from the association at 8728 Colesville Road, 20910.

## Shredder Handles Staples, Clips

NORTHBROOK, Ill. — The Shredmaster Corp. 1601 paper shredder is a stationary floor model that can shred paper, staples and paper clips with ease, the firm said.

Its offsetting, double-cutting, cylindrical blades shred the paper widthwise and then again lengthwise into unreadable strips about 5/32-in. by 1-in.

The unit costs \$3,395 from the firm at 1101 Skokie Blvd., 60062.

By Patrick Ward

Of the CW Staff

BAL HARBOUR, Fla. — If consumer bills carried a standardized, optically scannable code, corporations could eventually use electronic funds transfer systems (EFTS) instead of clerical labor to perform remittance processing, according to Gordon G. Dinsmore, vice-president of the Metropolitan Life Insurance Co.

Dinsmore joined George C. White, a vice-president of the Chase Manhattan Bank, and Lawrence Weiland, president

of Tri-Data Corp., in presenting the concept at a recent American Bankers Association conference here.

The innovation's biggest advantage is that it could pave the way for an electronic version of a European Giro-type credit transfer system, they said. This could benefit corporations, banks and consumers alike by reducing paper handling, the three explained.

The initial advantage of the standard coding, though, would be to help banks provide more efficient lock-box remit-

tance processing. This is a service in which a bank collects payments sent to a client corporation, processes the payments and deposits them in the client's account.

The client corporation receives a magnetic tape to update its files and can come out ahead financially if the bank has the facilities to process payments more efficiently than the client corporation itself can.

This service is expensive for banks today because clerks must first separate each client corporation's mail and set up processing of that particular client's remittances, Dinsmore said.

If each corporation's bills carried a standard code, however, a bank could put all of its clients' remittances in the same OCR hopper and process them much more efficiently.

Banks would then be able to offer lock-box processing at a much lower price than they do now, the three proponents said.

The proposed coding on the bills would identify the corporation by the bank and account through which it is to be paid. The bill would also identify the customer making the payment and the amount of the bill.

Bills from different corporations could still vary in size and paper weights as checks do, they said. The optical characters could be printed in any of several existing fonts.

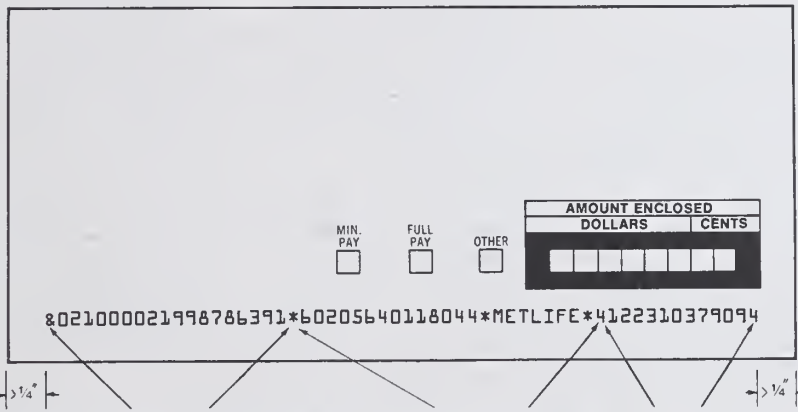
Space would be left for handwritten payment amounts and notations showing whether a full or partial payment was being made.

### Bigger Goal

But the chief goal of the idea's proponents goes beyond better lock-box processing. They hope adoption of the standard code will help banks, consumers and the U.S. Postal Service by cutting down the flow of paper through the banking system.

If enough corporations adopted the optically scannable bill line, a consumer

(Continued on Page 20)



On this example of a bill, optically scannable characters within the first two arrows identify the bank and accounts where funds are to be paid; the second group of characters identifies the paying customer; and the third shows the amount(s) to be paid.

## Report Offers Advice to Users Looking at Independent Disks

DELRAN, N.J. — Should a particular DP shop bring in an independent vendor's disk drives — and, if so, which vendor should it be?

Plug-compatible drives have proven themselves to be a viable alternative for IBM systems, but the user must still decide whether they are appropriate for his own shop, according to "All About Plug-Compatible Disk Drives," a report from Datapro Research Corp.

The report stressed three points to consider before making the decision:

• Evaluate the present system. Many installations neglect to periodically evaluate their equipment configurations to see if they match the shop's current needs. Whenever a user considers peripherals from other suppliers is the appropriate time to take stock and determine the number and model of peripherals the shop really needs.

Evaluating present and future needs protects the user from "just replacing existing components to get a cheaper system

that is either inadequate or overpowered," Datapro advised.

• Determine the conversion costs. Installing plug-compatible peripherals "is not, unfortunately, quite as simple as just switching plugs," the Datapro report warned.

"The devices must be tested once they

(Continued on Page 20)

## COM Viewer Doubles as Printer

CHICAGO — The "Spacemaster" microfilm reader/printer from Bell & Howell combines a large screen microfiche and jacket reader with an electrostatic printer, according to the firm.

The machine offers users a choice of six quick-change magnification ratios as well as six different-sized paper-copy outputs. Compatible with all popular jacket or microfiche forms, the reader/printer also makes positive paper prints from negative microfiche.

Spacemaster reader/printer users are also offered options of two different microfiche carriages — a 4 in. by 7-3/8-in. size for aperture cards and a 4-in. by 12-in. carriage capable of holding two fiche.

To facilitate fiche changing, the carriage opens automatically as it is drawn forward. The standard fiche carriage is 4 in. by 6 in.

The unit costs between \$1,000 and \$1,200 from the firm at 6800 McCormick Road, 60645.

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# Sycor Terminals Help Reduce Fire Hazards

CHICAGO — Ever since Ms. O'Leary's cow kicked the lantern over in the shed and fired up "a hot time in the old town tonight," the city of Chicago has been one of the most diligent students of fire-prevention practices.

The city's latest project is building a computerized data bank of fire-examination reports and violations which it hopes will reduce the incidence of fire. While the system is too new to demonstrate definitive fire reduction results, it has enabled

the city's fire department to receive faster, more accurate reports. And it has increased the volume of reports processed by more than 65%.

Like most municipalities, Chicago used to have its more than 200 fire inspectors hand write

their reports, after which the data would be typewritten and placed on file.

But, with 200 inspectors, said Lt. Edward Kiernicki of the bureau, "There were 200 different handwriting styles with three operators to interpret them."

## Sycor Terminals Used

To ensure the accuracy of the interpretations and speed up report generation, Chicago selected Sycor 340 terminals for use in its fire-prevention bureau.

The terminals and a numeric coding program developed by the bureau have actually succeeded in reducing the number of clerical personnel engaged in data entry from three to one.

Besides entering more data with fewer personnel, the terminals have also made the data considerably more error-free. Intelligent features in the terminal perform edit and checking routines on from 47- to 223 variable fields on the inspection report — depending on the type of inspection and the violation and location variables.

Once the data has been collected and entered, it is processed on the city's IBM 370 Model 155.

# Optical Scanning of Standard Bill Code Could Reduce Input Costs for Firms

(Continued from Page 19)

could mail his monthly bills and one or more checks in payment to his own participating bank.

An optical scanner in the bank would read the bills to balance them against the consumer's checks, link the bills and payments and pick up information on the banks to which payments should be credited, the identity of the consumer and the amount to debit his account.

The bank would microfilm the paper documents and destroy them. It would use existing wire networks to transmit payment data to the corporations' banks.

The participating corporations would then receive a daily update on magnetic tape from their banks.

## Limits Paper Circulation

Since the consumer's payment check would be drawn on his local bank, the paper would not have to circulate beyond that

bank and the process would be handled electronically from there.

The consumer could save on postage, because he could either stop by his bank with his bills and payment or mail everything in one envelope. With the day of the 25 cent stamp on the horizon, that's a considerable advantage, Dinsmore said.

And banks' savings in check-processing costs should be reflected in lower charges passed on to customers, he added.

And because the payments would be converted to machine-readable form at the start of the process, corporations could update their accounts receivable

records more rapidly and with minimal clerical effort.

Money would also be available to the corporations more rapidly, since the system would avoid the current time delay in mailing and processing checks.

So far, "we find that corporations are extremely interested in the concept, but our fellow bankers are not," White stated.

Other bankers feel the plan still relies on paper, he said. And while bankers are comfortable with Magnetic Ink Character Recognition (Micr), they are somewhat less confident about an equivalent level of OCR use, he said.

# Report Advises on Independent Disks

(Continued from Page 19)

are in, and this takes machine time, which interferes with your normal flow of work. Part of your staff will also be occupied with the selection procedure and installation."

Users should be sure to get installation time estimates from possible suppliers and then check this with the suppliers' previous customers, the report advised.

• *Investigate the alternatives.* "Compare the costs of acquiring and using independent peripherals and the expected savings with those of other alternatives for improving your system," the report urged.

If changing peripherals still seems like a good way to bring savings, then the user should consider two means of reducing the effective cost of present peripherals, the Datapro report urged.

He should try using "accumulated purchase credits to buy the equipment [he's] been renting or negotiating a purchase/lease-back arrangement with a leasing company," Datapro suggested.

However, both alternatives require "a willingness to use your present equipment for some time to come," the report noted.

The report also included some pointers to help the user determine if a particular vendor's product will be right for his shop.

• *Availability.* This comprises both delivery times and geographical availability, of the vendor's equipment, the report noted.

"Few of the independents have yet established complete coverage of the nation, and it is unlikely that any of them will ever develop the scope of coverage that IBM has," Datapro said.

• *Cost.* The potential for saving money is the biggest reason to consider independent peripherals, Datapro observed. The three elements to consider are equipment cost, installation cost and maintenance cost.

Equipment costs vary with the manner of acquisition. "The basic choices, in order of increasing annual cost, are outright purchase, long-term leasing (for more than one year) and rental under a one-year lease," Datapro stated.

"The trade-off is length of commitment and, therefore, [the user's] flexibility to adjust to changing requirements and the availability of improved equipment."

Installation costs, as noted earlier, consist of the personnel and machine time necessary to select, install and check out the new equipment.

Maintenance costs can differ considerably among vendors because some include full-time maintenance coverage under their standard leasing plans, while others charge extra for coverage beyond one shift/day.

• *Reliability.* There are several ways to determine in advance

the reliability of a vendor's products. The experience and reputation of the company is one measure. Calling up users of the product is another, and testing the unit in-house is a third.

Once the user has decided on the disk units he wants, he should not just sign the contract out of the salesman's briefcase, Datapro stated.

Instead, the user should make sure the contract includes a guarantee of "complete functional compatibility with the equivalent unit in the mainframe manufacturer's own product line; a promise by the vendor to assume full liability for any damage to the mainframe maker's equipment; and a promise that the vendor will perform all phases of the installation process at no extra charge."

Payments to the vendor should hinge on the unit's satisfactory completion of an acceptance test. "It would be reasonable, for example, to require at least 95% availability of the unit over a 30-day period, with complete functional compatibility under all operating conditions," Datapro concluded.

# Latest Volume in Infotech Series Examines Input/Output Problems

MAIDENHEAD, England — "Input/Output," the latest volume in the "Infotech State of the Art Reports," "examines the problems of input/output, both inside and outside the computer system; discusses the interface between the computer system and the human user; and describes the factors of input/output that affect overall system performance," Infotech Information Ltd., said.

The 524-page report links ex-

tracts from papers, conference presentations and discussions in a framework designed to bring out essential points.

The report also includes full versions of the presentations and papers and a bibliography.

An individual copy of the report costs \$141 and a subscription to eight reports costs \$752 from the firm at Nicholson House, High St., SLG 1LD, Berkshire.



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# The beginning and the end of data communications

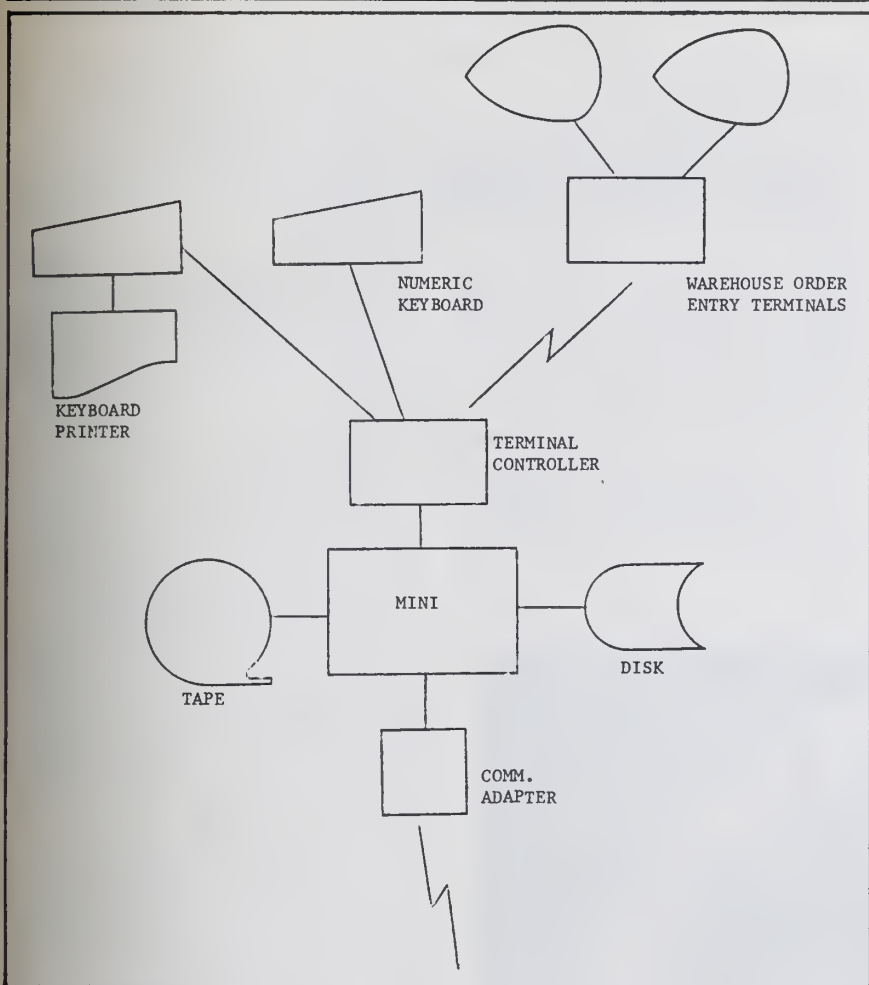
A special supplement on Data Communications Terminals in the July 30th issue of Computerworld.

All data communications start and finish with data communications terminals. And you'll be reading all about them in our July 30th supplement. Edited by Ron Frank, this supplement will take an in-depth look at data communications terminals and their effective use in data networks. You'll see applications stories, tutorials and comprehensive articles on topics like these:

- Batch vs. On-Line
- The Man-Machine Interface
- The right terminal for the right application

If you have anything to do with data communications, you should be reading this supplement from start to finish.





Configuration of Various Source Data Terminals Supported by the Data Entry Mini

## Logical Growth Pattern — Part 2

# Remote Job Entry Can Be Step Easily Taken by a Minicomputer

By Gerald R. Doctor  
 Special to Computerworld

The minicomputer has supported a logical growth from simple remote terminal control to complete transaction processing capability. Key-to-disk and other shared-processor applications are a good foundation.

But building upon the basic capability of the shared-processor system, we can expand to include remote job entry (RJE) by adding medium-speed peripheral devices similar to those at the host processing facility.

With the addition of appropriate device driver software for printers and card readers, the system becomes a remote batch terminal/key entry.

The attachability of other peripherals (diskette, cassette, card punch, etc.) is possible also, requiring only the appropriate software driver modules.

The system now has, in addition to all the key-to-disk capabilities:

- Concurrent RJE/key entry.
- All the processing power of the host CPU available at the remote site.
- High-speed remote printing.
- Input from cards, keyboard, tape.
- Output to printer, tape, disk.

The disk drive can be used for spooling communication messages from the host processing facility or other remote sites prior to printing or local storage.

### Source Data Terminals

As the function of the data entry process becomes more understood by the originator and user of the data, the system can be oriented more toward the needs of the user, be programmed to reflect his application requirements and becomes what is commonly referred to as job-oriented.

In this kind of system, the user interacts with the data entry system, providing inputs based on an understanding of the

(Continued on Page 22)

# Randal Link 100 Offers 2780-Type Communications

By Vic Farmer  
 Of the CW Staff

TORRANCE, Calif. — The Link 100 from Randal Data Systems is a stand-alone, programmable diskette-based business system with an optional IBM 2780-type remote communications package.

The typical system has a 32K-character processor, data access terminal, a 1.2M-character dual floppy disk drive and the Randal Time-Sharing Operating System (RTOS).

In addition to the communications option, the firm is offering a choice of printers from 30 char./sec to 600 line/min and core memory expandable to 64K. The system is upward-compatible with Randal's RDS 300 system.

The CRT terminal has a separate numeric pad, direct cursor positioning for fast editing and formatting and a 960-character display of 12 lines of 80 characters each.

Disk drive capacity can be expanded to 4.8M characters and the firm claims 1/2-sec average access time to any record in the file.

RTOS has 200 full-text language error messages that describe system problems to the operator and multitask and program handling.

The operating system also has selective data file and total diskette backup utilities, according to the firm. Another utility generates reports in the formats required by users.

### Automatic On-Line Answering

The 2780 communications package has automatic on-line answering of incoming calls, automatic retransmission of data on transmission error, data transmission up to 4,800 bit/sec and double buffered transmission for disk files and line printer.

The basic Link 100 is said to be able to be used in remote locations as an intelligent data capture device. The system provides facilities for data entry, data validation computation and other data

entry operations.

If invoices are being entered, for example, customer and product codes can be verified against a disk file to detect errors.

The processor uses a 16-bit word in a microprogrammed architecture. There is direct memory access, interrupt handling with priority, real-time clock and power failure detection with automatic restart.

The typical system is priced at \$12,000 or \$334/mo from the firm at 2807 Oregon Court, Building F, 90503.

## Olivetti Modular A5 Now Available in U.S.

NEW YORK — Olivetti has made its A5 minicomputer available throughout the U.S. after testing it in selected markets.

The A5 is part of a new family of minicomputers. Capable of functioning as a desktop accounting machine in a stand-alone environment or as a terminal, the modular design of the A5 allows for expansion at any time, the firm said.

Memory capacity can be increased by adding internal modules; the mini's physical characteristics can be changed by the external addition of such devices as the CTU 5400 or the CTU 1000 magnetic tape cassette unit, LCU 5800 communications control unit, SV 160 line printer, LN 20 paper tape reader, PN 20 paper tape punch and various forms-handling devices.

The A5 is equipped with:

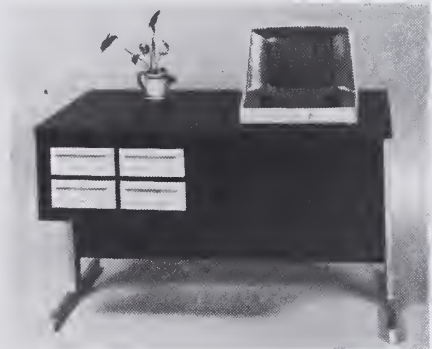
- Central unit comprising read-only memory (ROM), CPU and random-access memory (RAM) for programs and data.
- Buffered electronic keyboard arranged in three sections; alphanumeric, numeric and function keys.
- Control status keys.
- Operator guidance display panel.
- Fully buffered printer.
- External storage magnetic cards.
- Input/output peripheral capability.

The Olivetti A5 was designed and priced with small businesses in mind, "for their entry into computerization," Olivetti said. It also provides data processing for large organizations.

For the latter, the A5 offers communication capabilities and can be utilized as a remote batch terminal, for on-line data collection, or as a remote inquiry station. It has asynchronous transmission to 1,200 bit/sec and synchronous transmission to 2,400 bit/sec.

Some of the major software packages available from Olivetti are credit union, contractors' job cost, accounts payable, accounts receivable and payroll. In addition,

(Continued on Page 22)



Link 100 System



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## Summagraphics Designs

## Tektronix Interface

FAIRFIELD, Conn. — Summagraphics Corp. has interfaced its products to Tektronix calculators.

The interface, consisting of a cable linking the Summagraph controller to the Tektronix Model 152 BCD Interface, enables the transfer of X-Y coordinate values from the Summagraph tablet to the calculator.

The Summagraphics tablet/digitizers, in sizes from 11 in. by 11 in. to 36 in. by 48 in., operate with a resolution of 100 line/in. or 200 line/in.

The interface connecting cable is priced at \$250. Interfaces are also available for the Digital Equipment Corp. PDP-11, Data General Nova, and Hewlett-Packard HP-9800 series.

The firm can be reached through Box 781, 06430.

## RJE Easy Step for Minicomputer to Take

(Continued from Page 21)

source data. Inquiry/response programs can be implemented because the operator knows what the application is.

The data entry function ultimately moves into the area where data is generated, eliminating intermediate data transcription tasks, with accompanying benefits to the user.

Entry and control of data into the processing cycle is now right at the source of the data. Hence, we use the term "source data automation."

Source data terminals are used in transaction processing for such applications as banking, order entry, point-of-sale recording, interactive file access and many others.

The minicomputer provides support both for on-line to the host applications (where the mini functions simply as a concentrator to relay messages to the host) and also for local applications

(where the mini performs the editing logic for data entry tasks).

A key word in the message from the terminal for identifying transaction type is detected by the mini software to determine whether the message is to be handled locally or transmitted to the host facility.

The objective of this configuration is to provide interfaces for a wide variety of input devices which can all come under the editing and validation control of the data entry minicomputer, which also provides for mass storage and a link to the host processor.

Support for CRTs, keyboard/printers, Teletypewriters, Touch-Tone pads, badge readers, etc., provides flexibility for a large array of different terminals, which is especially useful in diversified organizations where data comes from many sources.

A special kind of data entry function-

ality is provided by document scanning equipment under program control of the minicomputer. The hardware must be enhanced by the addition of a controller to interface the document scanner to the minicomputer's I/O bus, plus additional main memory to provide buffers for handling the data.

In the operating system, the mechanisms for core and disk buffering already exist from the basic key entry capability. Additional software is necessary for driving the scanner interface controller and providing data entry logic for pocket selection.

The salient features of this scanner/key entry system are:

- Direct transcription and high data rate cut operator costs.
- Extensive validation, editing capabilities for data entered either from document scanner or keyboard devices.
- Rapid response pocket selection.
- Access to disk-resident data from keyboard terminals after scanning to allow for corrections, additions, deletions.

Many feel the marriage of optical character recognition (OCR) and keyboard terminals into a minicomputer-based system will finally open up the long-awaited OCR market.

## Data Base System

Many applications for entering data into the computer system require a disk-resident file of previously entered data which can be accessed for various operations during data entry.

This requires the addition of data base management software and a higher level transaction processing language for the user to program his applications, in conjunction with necessary hardware extensions such as disk files for data storage.

The system in addition to standard key entry capability would have:

- Disk resident data base access from local or remote entry stations.
- Variety of disk access methods; sequential, index sequential, etc.
- Conversational computing from CRT terminals.
- Transaction processing — user programmed.
- Higher level programming language such as Cobol, RPG.
- Data base management facilities.
- Ability to interact with host master files if required.

As you can see, shared-processor data entry systems are the basis for expansion to multifunction systems, involving concurrent support for a variety of data entry devices.

Doctor is a senior principal engineer in Honeywell's Minicomputer and Network Support Department.

Olivetti Modular A5  
Now Available in U.S.

(Continued from Page 21)

tion, Olivetti directly with the cooperation of software houses will provide customer software to specific categories of users, the company said.

The basic programming tools are BAL, compiled directly by a compiler stored in ROM memory, and Apco, a conditional assembler, which uses application-oriented language to obtain the most effective programs for the customer. Apco not only generates the program, but also the documentation and the user's operation instructions, Olivetti said.

Prices for the A5 start at \$4,400 for the minor configuration and, because of its modularity, can reach \$18,000. The software price, which is a one-time charge, depends on the application.

The introduction of A5 in Europe started in September 1974, and more than 3,000 units are already installed, the company said.

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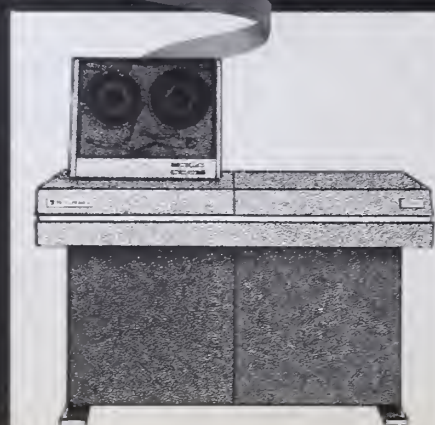
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## Miniworld Products

### Okidata M300 Stores 9M Bits

MOORESTOWN, N.J. — The M300 disk memory systems from Okidata Corp. replace the Okidata M200 series, but use the same 9-track flying head modules and mechanical rotating assembly package.

Price for the M300 disk memory system begins at around \$3,000.

Each M300 can store up to 9M bits on

128 tracks with an average access time of 12.5 msec, the firm said. The disk memory system is a complete package, including read/write electronics, track selection electronics, TTL interface, control electronics and power supply, contained in 10.5 vertical inches of rack space.

Okidata Corp. is located at 111 Gaither Drive, 08057.

### Broomall Introduces Flatbed Dataplotter

BROOMALL, Pa. — The Model 430/101 Flatbed Dataplotter from Broomall Industries is designed for high-speed plotting of digital graphic information requiring smooth line quality, reliability and precision.

Lines drawn at any angle as well as curved lines do not exhibit step functions because plotting is performed in the line segment mode rather than incremental mode, the firm said.

A digital servo (closed loop) positive position system controls the pen so the system is drift free, and a special velocity control included as part of the control system is said to optimize speed of plotting.

The standard plotting area is 31 in. by 36 in. on a variety of drafting papers, mylar and scribe coat.

Optional accessories include multipen assembly (4 pen or 8 pen), a precision paper advance system, a scribe tool attachment and a symbol printer.

The price is \$20,200, including control-

ler and board.

For more information and/or a demonstration of the 430/101, the firm is at 682 Parkway, 19008.

## Memodyne Extends Recorder Line

NEWTON UPPER FALLS, Mass. — Memodyne Corp. has enhanced its digital cassette recording line by adding the Model 763 high-speed recorder for mini-computer or terminal peripheral storage.

The 763 contains a transport, with a servo system that maintains constant tape speeds of from 20- to 120 in./sec. The unit meets the specifications of most standard recording formats such as CNRZ, phase-encoding and CRB.

Model 763 is said to provide a completely symmetrical recording system that can be operated entirely by digital control at TTL levels once the cassette is inserted.

Digital inputs run, control direction and select from two-tape speeds. Information may be recorded on two channels. The electronic circuit card converts the end-of-tape sensor to digital levels and inhibits high-speed tape operation when necessary.

The Model 763 costs about \$400 from the firm at 375 Elliot St., 02164.

### VRC Cartridge Disk Drive Storage Capacity 400M Bits

NORTH SPRINGFIELD, Vt. — Vermont Research Corp. (VRC) has announced its Model 5017 cartridge disk drive with a formatted storage capacity of 400M bits for large-volume users.

The fast-access Model 5017 serves on its own data track, permitting it to find and lock on the right track independent of temperature variations, VRC said. Average head positioning time is 35 msec.

For ease of evaluation by the user, VRC can provide a controller to interface to Digital Equipment Corp.'s PDP-11.

The unit is priced at \$6,890 in over 100 quantities from the firm at Precision Park, 05150.

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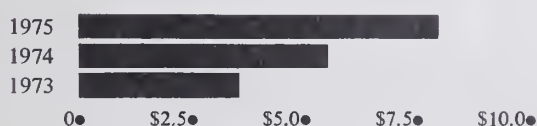
addition to our course development and production facilities in Elk Grove Village, Illinois, and Mexico City, we began operations in Dusseldorf, Germany. Of course, you can order programs for delivery anywhere in the world.

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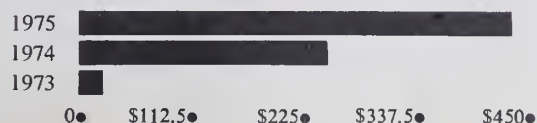
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The Dynamic Communications Resource



### Price Rolled Back by 20%

#### On Rolm 1603 Rugged Mini

CUPERTINO, Calif. — Rolm Corp. has reduced the price on its Model 1603 severe environment computer by 20%.

The price for the 16-bit processor is now \$7,950 which includes a 47-440 Hz power supply, 8K of core memory, four accumulators, 16 levels of programmable priority interrupt and direct memory access.

The firm is at 18922 Forge Drive, 95014.

#### IMS Has Hytype Printer For Intellec 8 Model 80

SAN LEANDRO, Calif. — IMS Associates, Inc. has a Diablo Hytype printer and controller for the Intellec 8 Model 80 at a price of \$2,695.

The price includes controller, printer, power supply, case and cable assembly.

Called the Imsai-30, the product supports and includes all standard Diablo Hytype options.

IMS Associates is at 1922 Republic Ave., 94577.

#### Tycom Links Ascii Devices To Programmable Calculators

FAIRFIELD, N.J. — An Ascii parallel T<sup>2</sup>L or parallel/serial T<sup>2</sup>L/RS-232 interface for programmable calculators is available from Tycom Systems Corp.

One end of the interface connects to the programmable calculator while the other end gives the user the ability to connect parallel or serial Ascii devices.

Tycom has available a parallel or serial Ascii IBM Selectric terminal and RS-232 interfaced digital cassette and CRT. The purchaser may use the T<sup>2</sup>L or RS-232 interface boards for his own peripherals or systems.

The price is \$895 from the firm at 26 Just Road, 07006.



## CI Notes

### Annually Through 1977

# Packaged Software Seen Growing 60%

## Over 95% of Exhibit Space Sold for September Wescon

SAN FRANCISCO — "Electronics in the Next Thousand Days" is the theme for the 24th annual Western Electronic Show and Convention (Wescon), which will be held here Sept. 16-19 in Brooks Hall and the Civic Auditorium.

Over 95% of the available exhibit space has been contracted for so far, and show managers anticipate that all 489 spaces will be occupied by some 275 exhibitors.

In addition to the exhibits, Wescon's Professional Program Committee has scheduled 32 half-day sessions.

Exhibitors will include Data I/O Corp., Data Technology Corp., Fairchild Systems Technology, General Electric and Hewlett-Packard.

Plessey Semiconductors, Tektronix, 3M Co. and Versatec will also have booths at the exhibit.

The exhibit will be open each day, Tuesday through Friday, at 9:30 a.m. The show will close at 5 p.m. on Tuesday and Thursday, 9 p.m. on Wednesday and 4 p.m. on Friday.

## DEC to Expand

PHOENIX — Digital Equipment Corp. (DEC) plans to build a 320,000 sq-ft facility here for volume manufacturing of processors and peripherals, a spokesman said.

He declined to specify which products would be made here.

## SSA Purchases STC Drives

LOUISVILLE, Colo. — The Social Security Administration (SSA) has purchased tape subsystems on lease from Storage Technology Corp. (STC) for \$12.2 million.

The majority of the sale will be shown in STC's third-quarter results.

## Supershorts

Data Communications Corp. has created a new division, Minicomputer Systems Division, to market a business interactive terminal system called Bits.

Montevideo Technology, Inc. has purchased the Avionics portion of Control Data Corp.'s Magnetic Components Division, including two manufacturing plants.

Computer Resources, Inc. has formed a subsidiary, CRU, for the manufacture and sale of an analog computer performance measurement system.

Qume Corp. has appointed Facit AB as its exclusive distributor in Western Europe.

By Nancy French  
And Molly Upton  
Of the CW Staff

The market for applications packages should grow about 60% a year through 1977, predicted Bill Watson, chairman and chief executive officer of Software International Corp.

Indications from other vendors confirmed these expectations. University Computing Co.'s (UCC) applications software business grew about 100% a year between 1972 and 1974 and 60% between 1974 and 1975, said President Don Thomson.

He expects UCC's growth in this area to be about 50% in each of the next two years.

Software International Corp.'s sales have risen 101% over those in the same seven-month period last year, and UCC's sales in the first four months set a record.

Thomson said the good results were part of a trend that started about four or five years ago, rather than a reflection of the recession and companies' reduced budgets for in-house development programs.

### Stigma Gone

The software industry as a whole has overcome the stigma of a few years ago resulting from fly-by-night shops and those that sold packages without future support, said Bill Watson, chairman and chief executive officer of Software International.

Packaged software has become increasingly popular because now users have experienced or at least heard just how viable alternative packages are to doing the work in house, explained Scott Harris, executive vice-president of Infonational in San Diego.

Packaged software offers both price and time advantages, Watson pointed out. Some estimates indicate buying a software package costs seven to 10 times less than in-house development and takes about one to three months vs. considerably longer for a comparable system developed in-house.

With packaged software, management can know what it's getting, when and how much it will cost. In addition, a generation of college graduates with hands-on computer experience is beginning to permeate corporate management structures throughout all industries, and they are cognizant of the pitfalls of in-house development, Watson pointed out.

And now that times are tough, and companies actually need more, rather than less, information for decision making, users are looking for easier, less expensive and less time-consuming ways to get these systems running, Thomson said.

Harris said over the past few years general ledger has been Infonational's largest

selling system, followed close behind by accounts receivable.

"Payroll used to be most in demand about two or three years ago, but most everybody has bought theirs by now," he remarked.

### Popular Products

UCC's most popular products are for commercial banks with assets of \$250 million and above, Thomson said. These central information file systems are being sold throughout the country, Europe and Mexico, Thomson said.

The company's second-best seller is its general ledger systems designed for use with dual currencies.

Software International has about 250 users of its financial accounting systems and 85 of these are among the Fortune 500, Watson said.

"It's the bigger firms — the ones with the extensive in-house programming capability — that are buying the packages," he remarked.

"On-line systems will be the major growth area for us by far, because these types of systems need a combination of skills many in-house DP shops simply don't have," UCC's Thomson said.

Users, on the other hand, want more and more on-line information without having the in-house capability to develop systems to produce it, he said.

At the other end of the spectrum is the small company and the interest in more packaged applications software is spreading to these users, too, Watson noted, adding this potential market is even

## IBM Shuffles Positions to Give Two Units Dedicated Management

ARMONK, N.Y. — IBM has restructured some responsibilities within its General Systems Division (GSD) and Office Products Division (OPD) to give a dedicated management to these areas on an international scale.

In addition to product development, the GSD and OPD presidents are now responsible for all aspects of product management.

A new element, the International Operations Division, headed by Richard C. Warren, has been created to give functional guidance to GSD and OPD operations, including marketing, servicing and manufacturing, outside the U.S.

Warren reports to G.B. Beitzel, head of the General Business Group, as do Bart M. Stevens and C.B. Rogers Jr., presidents of OPD and GSD, respectively.

GSD and OPD activities in 17 countries

larger.

Software International has converted its financial systems to run on IBM System/3s and is now talking with minicomputer makers, he said. The reception from smaller firms has been slow, he said. They may be hurt more by the recession and their needs are not as substantial as larger companies.

In addition, they generally lack large, sophisticated programming departments, so there is a longer sales cycle, he said.

The DP manager in a small company generally feels everything should be done in-house, as that is what his job entails.

In contrast, in larger firms, the DP manager is concerned about on-time results for top management and knows he can spend the money for a superior product that will come up sooner, Watson said.

### Education Key

The key to successful applications software is documentation and education, Watson said. His firm spends about 90% of its time on education and provides the customer with videotapes and documentation to ensure proper operation.

Another element is a good report writer package so the user can generate whatever type of report he wants without asking the vendor to tailor the system, he said.

When a firm asks for modifications on a system, Software International tells it to install the system as is and live with it for six months, then ask for modifications.

Very few ask for modifications, he said, as users find they can get what they want with the report writer provided.

will be the responsibility of a general manager of the General Business Group, who will report to the IBM country general manager and receive functional guidance from the International Operations Division.

James J. Forese has been named assistant group executive, finance and planning, of the General Business Group. He also reports to Beitzel.

### Continuation of Moves

"These moves are a continuation of the direction we have been moving in for some time to enhance IBM's ability to serve our Office Products and General Systems customers through a dedicated management approach," Frank T. Cary, IBM chairman, said. "They are designed to make our business more manageable and more responsive."

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## To Ease Squeeze

# Study Sees Mini Makers Carving Out End-User Niches

NEW YORK — Although the value of the minicomputer and microcomputer market between 1974 and 1984 is expected to be worth over \$30 billion, mini-computer makers will have to place increasing effort on carving out a vertical niche in the end-user market to ameliorate the squeeze by major computer manufacturers and semiconductor houses, a report from Frost & Sullivan, Inc. said.

The emphasis on end-user sales will come as microcomputer or semiconductor manufacturers encroach on the minicomputer's OEM sales area, the report said. During 1980, shipments of

minis will total around \$1.9 billion, while micros will reach \$1.3 billion, the report said, compared with bases in 1975 of \$1.2 billion for minis and \$388.2 million for micros, the research firm indicated.

The strongest end-user markets are small business computers, data communications and data entry, while the major OEM markets are industrial automation and medical applications, Frost & Sullivan said.

Success for minicomputer makers will depend on the ability to pinpoint market segments as well as on vertical integration or in-house manufacture of pe-

ripherals and software, the report said.

Minicomputer sales in the small business area are expected to jump from \$200 million in 1975 to \$250 million in 1980, while data communications will grow from \$300 million to \$515 million in 1980, the report said.

### Minis in Data Entry

Use of minis in data entry, including key-to-disk, optical character recognition (OCR), factory data collection and point of sale (POS), is expected to grow from \$82 million in 1975 to \$152 million in 1980.

The report indicated the dollar volume of minicomputers used in OCR equipment will outstrip that in key-to-disk by 1981, with \$40 million in OCR and \$36 million in key-to-disk.

In the segments Frost & Sullivan labeled as strong in the OEM mini market, industrial automa-

tion should grow from \$300 million to \$500 million in 1980 while medical jumps from \$90 million to \$150 million in 1980.

Data communications will overtake industrial applications as the largest area in mini shipment value between 1975 and 1980.

Mini shipments for data communications, starting from \$300 million in 1975, will grow to \$515 million by 1980, while the industrial segment will grow from \$300 million to \$500 million in 1980.

Although there seems to be enough market to share with microcomputers, in at least one area the dollar volume of micros will outstrip that of minis by 1980, according to the report's projections.

In education microcomputer shipments are expected to soar from \$15 million in 1975 to \$175 million in 1980, whereas

shipments of minis will grow from \$70 million to \$125 million in 1980.

Use of microcomputers in small business computers is estimated to grow from \$30 million this year to \$125 million or 15,000 units in 1980.

Another fast-growing area for micros is intelligent CRTs, with shipments valued at \$70 million this year jumping to \$180 million in 1980.

Use of micros in POS units will jump from \$120 million to \$200 million in 1980, the report said.

### OFFICIAL NOTICE RESOURCES AGENCY OF CALIFORNIA Department of Parks and Recreation Computerized Reservation Services NOTICE TO CONTRACTORS:

Sealed bids will be received at the office of the State of California Department of Parks and Recreation, Administrative Services Division, 1416 Ninth Street, Room 1413-7, Sacramento, California 95814, telephone (916) 445-4308, up to 2:00 p.m. on Thursday, July 31, 1975. At that time and place they will be publicly opened and read for performing the services as follows: Furnish all labor, materials, equipment and necessary expenses to provide a complete reservation service for the Department of Parks and Recreation campsites and tours of the Hearst San Simeon State Historical Monument. Services shall include sales outlets throughout the State which shall serve the Department's needs for selling to the public direct and by mail. Prospective bidders may examine and obtain instructions, specifications, and bid forms by calling and/or mailing a request to the Department of Parks and Recreation at the address and phone number shown above.

No bid will be considered unless it is made on a standard bid form furnished by the Department of Parks and Recreation and is made in accordance with the instructions.

Bids must be submitted for the entire service. Deviations from the specifications will not be considered and will be cause for rejection of bids. The Department of Parks and Recreation reserves the right to waive any irregularities in a bid and to reject any and all bids.

The successful bidder will be required to execute a contractual agreement for a period of three years in the form of a Standard Agreement Form 2 which shall be binding upon the State of California only upon approval by the State. Copies of the specifications and instructions are on file in the Sacramento Headquarters of the Department of Parks and Recreation located at the above address.

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## Dataproducts Adds Two

WOODLAND HILLS, Calif. — In a move termed the first step toward reorganizing Dataproducts Corp. along functional lines, the firm has added two senior vice-presidents.

Thomas A. Sherby will join Dataproducts as senior vice-president of operations and Robert Bartizal as senior vice-president of marketing.

### Other Moves

■ Henri M. Semarne has been named director of international accounts for Univac's European Division. He replaces Roland J. Muri, who became director of marketing for the division's Region II, based in Rome.

■ William J. Mann has been appointed vice-president of operations at Mohawk Data Sciences Corp.

■ Steven G. Clayman has been named vice-president of marketing at ECS Information Systems, Inc.

■ James E. Ruttenburg has been appointed vice-president of the Communications Optimization Group of MCI Services Corp.

■ Henry L. Tinker has been appointed director of manufacturing of Memorex Corp.'s Equipment Products Group.

■ Eugene C. Murphy has been

named vice-president of sales at Cambridge Memories, Inc.

■ Sal J. Nuzzo, George E. Peterson Jr. and Richard T. Niner have been elected directors of Hazeltine Corp.

■ Jack R. Hosler has been named vice-president and chief financial officer of Wabash Magnetics, Inc.

■ Ronald F. Cerri has been elected vice-president of sales at Educomp Corp.

■ George C. Evanoff and Dr. Bernard A. Galler have been elected directors of National CSS, Inc.

■ R. Watson Bell has been elected senior vice-president and chief financial officer of Mohawk Data Sciences Corp.

■ Marvin G. Norman has been named vice-president of materials at Information Magnetics Corp.

■ Robert B. Witham has been named vice-president of sales of Applied Data Processing, North Haven, Conn.

■ Gary Olson has been named vice-president and general manager of National Computer Systems' Educational Systems Division.

■ Robert B. O'Brien has been elected a member of Remote Computing Corp.'s board of directors.

### Correction

Burroughs appointed Dennis W. Kosinski product manager of B1700 systems and Ronald J. Friedsam product manager of large systems [CW, June 11].

## Expansions

Computer Sciences Corp. has moved to larger quarters at 2251 San Diego Ave., San Diego, Calif.

Capac, Inc., a firm specializing in the development and marketing of minicomputer systems for business applications, has opened headquarters offices at 470 Main St., Ridgefield, Conn.

Cullinane Corp. has moved its headquarters to the Wellesley Office Park, 20 William St., Wellesley, Mass.

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# Wema Urges U.S. to Seek Relaxed Nontariff Barriers

PORTLAND, Ore. — The U.S. should attempt to procure an across-the-board reduction, if not elimination, of nontariff barriers (NTB) during the forthcoming General Agreement on Tariff and Trade (GATT) talks, representatives of the Western Electronics Manufacturers Association (Wema) told the President's Special Trade Representative here recently.

Earl Wantland, president of Tektronix Inc. and chairman of Wema, focused on nontariff barriers, while C. Lester Hogan, vice-chairman of Fairchild Camera and Instrument Corp. also sought reduction of tariffs on semiconductors.

They both stressed the U.S. should be prepared to make reciprocal concessions.

Wantland warned that the U.S. should not accept additional restrictions on U.S. high-technology electronics exports to gain U.S. advantages in other sectors such as agricultural products.

"In past years, the U.S. trade balance has been heavily supported by U.S. high-technology exports. There is every reason

to expect this situation will continue and even increase in the future," he said.

"In most cases, nontariff barriers have a much more limiting effect than tariffs on the market accessibility of products of U.S. high-technology companies," Wantland explained.

Wantland's principle recommendations included:

- Eliminate "country of origin" rules of the European Economic community.
  - Grant full-participant status to the U.S. in the Multipartite Accord for Assessment and Certification of Electronic Components in the common market.
  - Forbid credit of the value-added tax.
- He also criticized nontariff trade barriers affecting scientific and controlling instruments, computers and calculators; which fall into four general categories, including:
- Government procurement directives and practices favoring purchase of locally made goods.
  - Type acceptance and approval stan-

dards.

• Limitations which adversely affect servicing.

Type acceptance and approval standards, as practiced in Japan, involve no written guidelines, with rules apparently changing month by month, he said. Securing approval for the import of certain categories of equipment such as medical products, can take up to 18 months, he said.

Although the country of origin rules in the European Economic Community are not now fully enforced, there is a growing likelihood they will be, Wantland said.

These rules could disqualify U.S. producers that assemble completed devices in Europe from U.S.-produced parts, he noted.

### Strict Rules

The Japanese apply strict rules on returning goods to the country of origin for servicing, which can make the Japanese importer liable to the full amount of import duties by calling the machine "new," he explained.

A less favorable alternative to coping with value-added taxes would be to permit the credit of U.S. income taxes, he said.

In return for these reductions by other nations, Wantland advocated the U.S. should repeal or at least relax the Buy American Act.

"In addition, and because so many of the nontariff trade barriers our members have encountered are uncoded and arbitrarily applied, Wema believes the U.S. negotiators should focus on the possibility of developing codes for the resolution of major NTBs," Wantland said.

Hogan focused on tariff concessions to be sought on behalf of the semiconductor

industry.

Noting many nations have tariffs far in excess of the U.S.'s 6% on semiconductor products, up to 35%, he said, a 60% reduction in import duties would "greatly improve the potential for U.S. semiconductor exports."

"Wema believes, for example, that an annual increased export potential of \$500 million to \$700 million is highly possible within the next few years, given this type of tariff concession," he said.

### No Duties on Semis

The association recommended the elimination of all duties on U.S. semiconductor imports, in consideration for appropriate concessions by others. He noted this would aid the U.S. industry by lowering its costs on the imported sector of semis.

Hogan asked that semiconductors be classified as eligible products, allowing the President to extend duty-free treatment to the extent allowed under Title V of Public Law 93-618.

Hogan called attention to Japan's efforts to protect its integrated circuit (IC) industry, notwithstanding the plan to liberalize imports of ICs in 1974.

"Wema believes the U.S. should require Japan to make a binding commitment in the forthcoming GATT negotiations to remove once and for all its quantitative limitations on imported integrated circuits, digital computers, accessories and components," he said.

### Nippon Electronics Names NEC

LEXINGTON, Mass. — Through a distributorship arrangement with NEC Microcomputers, Inc. here, Nippon Electronics will introduce its Nucom-8 microprocessor chip to the Intel 8080 alternative marketplace.

## Judge OKs Memorex Settlement Of Eight Suits for \$3.6 Million

SAN FRANCISCO — Plans for a \$3.6 million out-of-court settlement of eight consolidated cases brought against Memorex Corp. by shareholders have been approved by Federal Judge Spencer Williams.

The plan calls for Memorex to provide \$982,500; nine directors and an officer to contribute \$2.5 million; and the auditors, Arthur Andersen & Co., to contribute \$100,000.

Memorex denied any wrongdoing and

said it settled to avoid a "protracted and expensive trial" and to protect its business reputation [CW, April 9].

The suits charged Memorex with artificially inflating the price of its stock by issuing allegedly incorrect and misleading statements about a subsidiary's earnings.

Estimates of damages had ranged as high as \$20 million.

Individual members of the class action suit have until Sept. 10 to file objections to the settlement.



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Shukan Computer, Computerworld's sister publication in Japan, is a joint venture of Computerworld and the leading electronics publisher in Japan, Dempa Publications. Shukan is the only newsweekly for the computer community in Japan and with the combined resources of the two companies, it has the largest news gathering organization of its kind in the world.

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# End-User Products Group Being Established by ICP

DALLAS - International Computer Products, Inc. (ICP) is establishing a Data Systems Group to handle sales, service and production of end-user products.

Plans call for the group to account for 50% of sales and earnings within the next three years, noted Harmon Hardy, president of the firm.

With the recent acquisition of Quindata, Inc., maker of word-processing products and tape preparation equipment for numerical control applications, ICP has acquired an end-user marketing force.

In addition to the Quindata line, which is sold to the end user, ICP also has what is basically the Eldorado minicomputer,

an Add Tape device, described as a portable communicating calculator, as well as point-of-sale units for installation in truck cabs, David Birk, head of the Data Systems Group, explained.

ICP markets a small business system using the mini. Rights to the mini were bought from Computer Development, Inc. which was formed after another portion of Eldorado was acquired by Anderson-Jacobson, Birk said.

Birk said his job is to assess what International Computer has in the way of end-user products and pull it all together.

International Computer Products makes cassette drives and terminals for the communications industry.

## CA Regroups Into Three Divisions

IRVINE, Calif. - Computer Automation, Inc. has been reorganized into three separate operating organizations: the Naked Mini Division, the Industrial Products Division and CAI Ltd., the company's British subsidiary.

Manufacturing, marketing and sales activities of minicomputers are concentrated in the Naked Mini Division, headed by vice-president Emmons Miles, who is division general manager.

All similar activities for the firm's line of computerized

tester systems are incorporated in the Industrial Products Division, with David H. Methvin, company president, serving as general manager.

Each division has its own sales staff, with James Siehl heading the Naked Mini division sales force and Dave Stein director of marketing.

In the Industrial Products Division, Douglas Cutsforth is director of sales and Abe Armoni director of marketing.

Geoffrey Salkeld is managing director of CAI Ltd.

## Grumman Forms T/S Subsidiary

WOODBURY, N.Y. - Gearing up to achieve its goal of being a nationwide services firm, Grumman Data Systems Corp. has formed Calldata Systems, Inc., a subsidiary here, to be responsible for commercial accounts.

Calldata incorporates several former Grumman Data Systems' subsidiaries, including Systematic Data Processing Services, Inc. of Waltham, Mass., and Data Reduction, Inc. of New York.

The Computility Division, based in Boston, is also included. Systematic has an IBM 370/155 and performs batch and remote batch work while Computility's Digital Equipment Corp. Decsystem-10 handles time-sharing work.

Data Reduction is a computer output-to-microfilm service bureau.

Robert A. Nafis, president of both Calldata and Grumman Data Systems, said "our aim is to make available to all commercial computer users superior data processing services at favorable prices.

"Calldata is a separate, commercial company organized specifically to accommodate the increasing demand for such services. We have committed to the company the resources necessary to sustain continuing growth and are prepared to extend Calldata's services to commercial customers throughout the country."

The move facilitates the separation of commercial accounts from work performed for Grumman Aerospace, a spokeswoman added.

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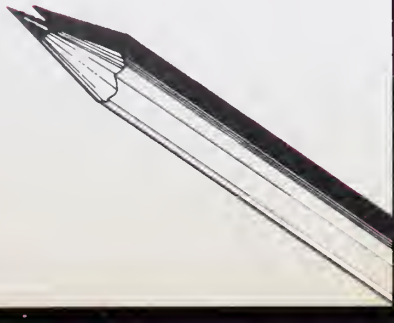
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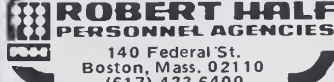
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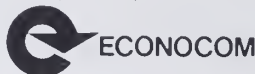
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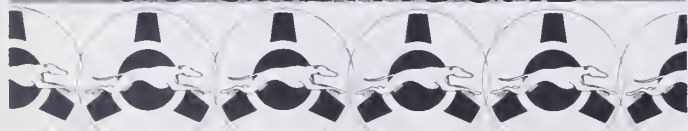
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# MDS Loss for '75 Hits Almost \$26 Million

PARSIPPANY, N.J. — Mohawk Data Sciences Corp.'s (MDS) loss for 1975 totaled nearly \$26 million, including nonrecurring charges of \$8.7 million. Of this, \$6.7 million stemmed from consolidation of manufacturing facilities and relocation of offices, as well as the discontinuance of unprofitable product lines, the firm said.

For 1974, the company reported a loss of \$14.9 million or \$2.38 a share. Contributing to the 1975 loss were a \$668,000 loss from discontinued operations and a \$4.3 million loss as a result of an accounting change for translation of foreign currencies. In addition, there was nearly \$2 million in nonrecurring

charges from the settlement of a class action litigation and other litigation fees. Revenues for the year rose to a record \$170.1 million compared with \$167.8 million in 1974. For the fourth quarter, revenues rose to \$44.5 million compared with \$42.2 million in the same period last year.

Losses grew slightly to nearly \$11.5 million or \$1.84 a share compared with \$10.6 million or \$1.70 a share in the comparable 1974 quarter. Chairman Ralph H. O'Brien said the record revenues were "an indication of the continued strong acceptance of the company's products, despite its past financial problems."

## Boothe Finishes Financial Restructuring

SAN FRANCISCO — Boothe Computer Corp. has completed a financial restructuring program. Funds for the project were raised through a 36-month \$17 million secured loan from a group of lenders, the sale of over \$4.9 million of computer equipment and from internally generated funds, the firm said. Boothe has extinguished a \$31.7 million debt to Finance-America Corp. by a cash payment of \$24 million and prepaid all of about \$300,000 of outstanding 6% subordinated debentures due in 1977.

U.S. and Canadian computer leasing-related debt has been cut from \$37.4 million at the end of 1974 to \$20.6 million, and stockholders equity has been raised from \$5.3 million to about \$13 million, the firm said. In addition, the company has been able to set aside \$2 million for Boothe Financial Services, Inc. to sustain the capital requirements of subsidiaries Courier Terminal Systems, Boothe Airside Systems and PSC Technology. Chairman D.P. Boothe Jr. said the new structure would have

"an immediate and continuing substantive effect" on the firm's profitability. "Cash outgo for principal and interest payments over the next 42 months for computer leasing alone will be reduced by \$10 million," he said. "Computer rental equipment book value (\$29.5 million) is now 15% of the original cost of \$190 million. Firm-term lease receivables are currently equal to the carrying value of computer equipment." Boothe is projecting operating profits for the balance of 1975 since revenue forecasts have been on target for the past 18 months and all manufacturing operations have reported profits to date. Lessees are retaining their systems longer and there is a strong rental and purchase demand for 360/65s, 50s and 40s, he noted.

Results for the year were penalized by interest totaling \$17.6 million on the company's indebtedness, he said. The company is negotiating the renewal terms of its bank credit lines. "Our analysis of all aspects of Mohawk Data Sciences' business in the past three months has resulted in a reorganization of operations, as well as key management changes and additions," he said.

## Dataproducts '75 Operating Income A Record, But Earnings Show Lag

WOODLAND HILLS, Calif. — Although fourth-quarter results sagged and operating income for 1975 was lower than forecasted, Dataproducts Corp.'s 1975 revenues and operating earnings reached record levels. Revenues for the year rose 25% to \$94.7 million compared with a restated \$75.8 million in the year-ago period.

The firm earned \$1.3 million or 19 cents a share compared with \$2.2 million in the year-ago period when there was a \$762,000 special credit. Microdata Nine-Month Net Drops; Third-Quarter Earnings Improve

Operating income was \$5.8 million or 86 cents a share compared with nearly \$5 million last year, when a special credit of \$2.9 million boosted earnings to \$7.9 million or \$1.16 a share. President Graham Tyson indicated 1975 earnings were lower than forecast because of economic conditions and high start-up costs of several new products. During the fourth quarter, revenues grew to \$23.2 million compared with \$21.9 million in the same period last year, but earnings sagged.

IRVINE, Calif. — Microdata's third-quarter earnings improved over those of the year-ago period, but nine-month earnings were less than half of the same 1974 period. Revenues during the three months were \$3.82 million compared with \$3.85 million in the same period last year. Earnings rose to \$318,391 or 20 cents a share compared with a restated \$287,065 or 18 cents a share. For the nine months, revenues rose to \$10.7 million compared with \$9.6 million in the year-ago period. Earnings dropped to \$364,350 or 23 cents a share, with a \$134,000 tax credit, compared with \$741,076 or 47 cents a share in the 1974 period, when there was a \$340,000 tax credit. President Donald W. Fuller said, "The third quarter ends on a high note, inventory down,

bank debt down and continued improvement in margins. The backlog is now at an all-time high and record sales and profits are expected in the company's fourth quarter." The 1974 results were restated to reflect a change in accounting for research and development costs.

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**New Registrations**

**TEKTRONIX, INC.**, Beaverton, Ore. 97005, a precision electronic equipment manufacturer, filed to register \$35 million of sinking fund debentures due May 15, 2000. Lehman Brothers, Inc. is the underwriter.

**HONEYWELL, INC.**, Honeywell Plaza, Minneapolis, Minn. 55408, filed to register 500,000 shares of common, which may be sold from time to time at prices and at terms then obtainable by or for the account of certain shareholders.

**STORAGE TECHNOLOGY CORP.** (STC), 2270 South 88th St., Louisville, Colo. 80027, filed to register 293,962 shares of common in exchange for the outstanding shares of Ultimacc Systems, Inc. on the basis of .5 STC share for each Ultimacc share.

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# Earnings Reports

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Three Months Ended March 31

	1975	1974
Shr Ernd	\$.10	\$.10
Revenue	925,789	849,017
Earnings	41,930	43,230

**COMPUTER ELECTION SYSTEMS**  
Year Ended March 31

	1975	a1974
Shr Ernd	\$1.03	\$.79
Revenue	8,021,396	5,958,105
Earnings	941,773	725,705

a-Restated to reflect accounting changes.

**ANALYSTS INTERNATIONAL**  
Nine Months Ended March 31

	1975	1974
Shr Ernd	\$.16	\$.12
Revenue	2,787,000	2,247,000
Spec Item	a(50,000)	.....
Earnings	133,000	102,000

a-Provision for loss on investment.

**COMPCORP**  
Three Months Ended March 31

	1975	a1974
Shr Ernd	.....	\$.11
Revenue	\$4,944,000	7,009,000
Earnings	(300,000)	205,000

a-Restated to reflect change in accounting for R&D costs.

**DIGITAL COMPUTER CONTROLS**  
Three Months Ended May 31

	1975	1974
Shr Ernd	\$.06	\$.03
Revenue	2,339,393	2,321,863
Earnings	89,462	41,844

**LOGICON**  
Year Ended March 31

	1975	1974
Shr Ernd	\$.78	\$.50
Revenue	33,668,000	22,690,000
Earnings	670,000	429,000
3 Mo Shr	.13	.18
Revenue	7,668,000	8,956,000
Earnings	114,000	152,000

**FABRI-TEK**  
Year Ended March 28

	1975	a1974
Shr Ernd	.....	\$.51
Revenue	\$35,258,176	39,123,783
Tax Cred	.....	860,000
Earnings	b(1,678,899)	1,775,414

a-Restated. b-Includes a pretax writedown in carrying value of product and in process inventories of about \$1.6 million and a pretax writedown in carrying value of production equipment inventory of about \$200,000.

**STERLING COMPUTER SYSTEMS**  
Year Ended March 31

	1975	a1974
Shr Ernd	\$.04	\$.28
Revenue	1,772,439	1,928,908
Disc Op	(158,743)	(22,466)
Earnings	30,235	194,730
3 Mo Shr	.....	.08
Revenue	412,363	400,590
Disc Op	(96,671)	(9,710)
Earnings	(41,405)	52,034

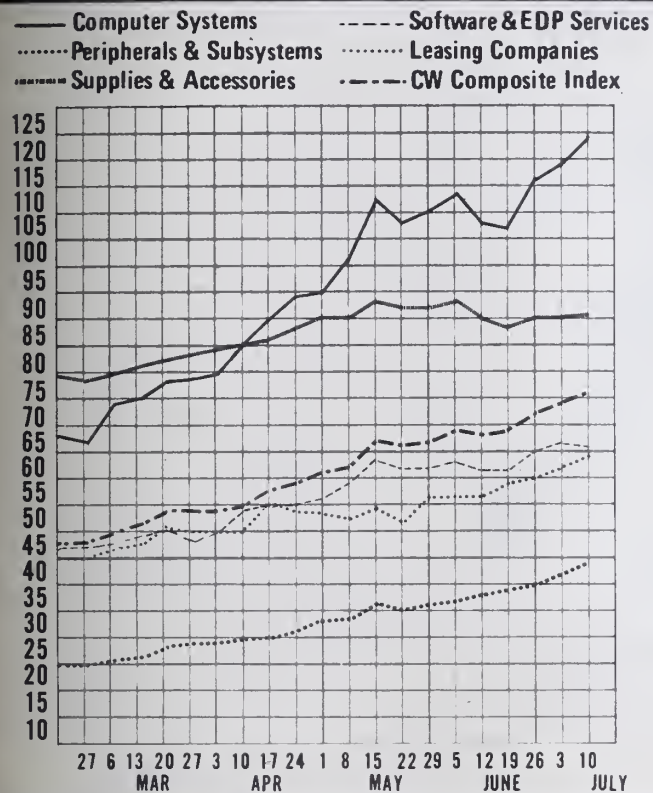
a-Restated for discontinued operations and to charge off R&D costs incurred.

**MICRODATA**  
Three Months Ended May 31

	1975	a1974
Shr Ernd	\$.20	\$.18
Revenue	3,820,338	3,848,247
Tax Cred	116,000	133,700
Earnings	318,391	287,065
9 Mo Shr	.23	.47
Revenue	10,679,575	9,566,494
Tax Cred	134,000	340,500
Earnings	364,350	741,076

a-Restated to reflect accounting change.

## COMPUTERWORLD Computer Stocks Trading Indexes



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# Computerworld Stock Trading Summary

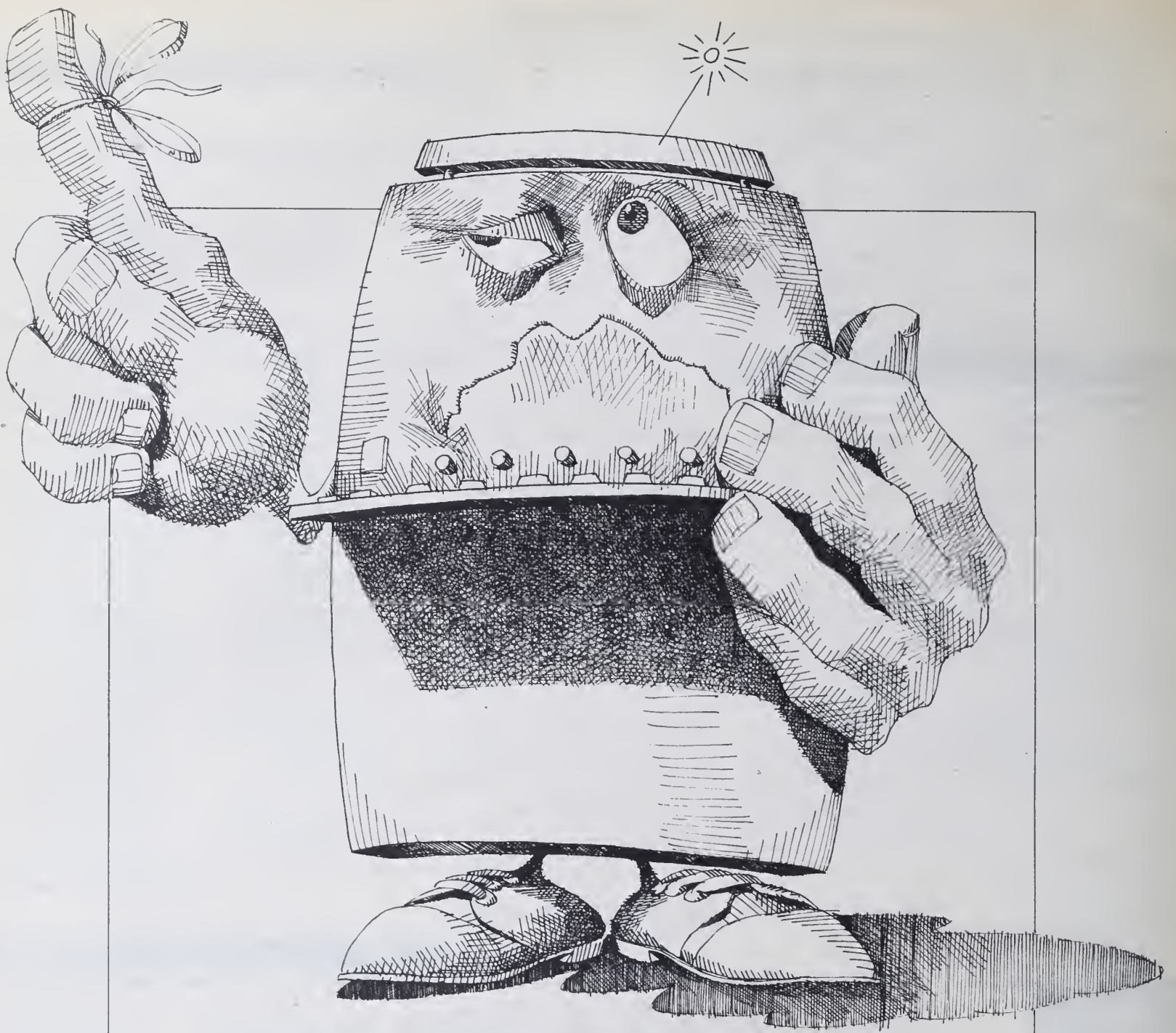
CLOSING PRICES WEDNESDAY, JULY 9, 1975

All statistics compiled, computed and formatted by TRADE\*QUOTES, INC. Cambridge, Mass. 02139

F X C H	1975 RANGE (1)	CLOSE JUL 9 1975	WEEK NET CHNGE	WEEK PCT CHNGE	SOFTWARE & EDP SERVICES						
					1975	CLOSE JUL 9 1975	WEEK NET CHNGE	WEEK PCT CHNGE			
<b>COMPUTER SYSTEMS</b>					<b>PERIPHERALS &amp; SUBSYSTEMS</b>						
N	BURROUGHS CORP	62-109	108 1/4	+ 3/8	+0.3	N	ADDRESSOGRAPH-MULT	4- 9	8 1/2	+ 1/4	+3.0
O	COMPUTER AUTOMATION	2- 9	9 3/8	+1 1/4	+15.3	D	ADVANCED MEMORY SYS	1- 7	6 3/4	- 3/8	-5.2
N	CONTROL DATA CORP	11- 23	20 7/8	+ 1/2	+2.4	N	AMREX CORP	3- 7	6 1/8	0	0.0
N	DATA GENERAL CORP	13- 38	37 1/2	+ 1 1/4	+6.3	D	ANDERSON JACOBSON	1- 3	2 1/2	0	0.0
C	DATAPoint CORP	6- 25	24 1/4	+1 1/4	+5.4	O	BEHRENS MEDICAL ELEC	1- 5	4 3/8	- 1/8	-2.7
O	DIGITAL COMP CONTROL	1- 4	3 1/4	0	0.0	A	BOLT, BERANEK & NEW	5- 13	12 7/8	+3 1/4	+33.7
N	DIGITAL EQUIPMENT	46-120	119	+ 2 7/8	+2.4	N	BUNKER-RAND	4- 7	7	- 1/4	-3.4
A	ELECTRONIC ASSOC.	2- 3	3	+ 1/8	+6.3	A	CALCOM	4- 7	6 1/4	- 5/8	-9.0
N	ELECTRONIC ENGINEER.	5- 13	13 3/8	+1 1/8	+12.1	D	CAMBRIDGE MEMORIES	3- 5	4 3/8	0	0.0
N	FOXRADIO	23- 42	40 3/4	+1 3/8	+3.4	N	CENTRONICS DATA COMP	7- 25	23 3/4	+ 1/4	+1.0
O	GENERAL AUTOMATION	6- 13	12 1/2	+2 5/8	+26.5	O	CODEX CORP	15- 38	33	+1	+3.1
C	GENI COMPUTER CORP	1- 1	1 1/2	0	0.0	O	COGNITRONICS	1- 2	1 3/4	0	0.0
N	HEWLETT-PACKARD CO	58-120	119 1/2	+ 2 7/8	+2.4	O	COMPUTER COMMUN.	1- 2	1 1/2	- 1/8	-7.6
N	HONEYWELL INC	22- 43	37 7/8	- 1/4	-0.6	O	COMPUTER CONSOLES	3- 7	4 3/4	- 1/4	-5.3
N	IBM	158-224	209 1/2	+1	+0.4	A	COMPUTER EQUIPMENT	1- 2	1 5/8	+ 1/8	+8.3
O	INFOMEX	1- 10	8 7/8	+ 1/8	+1.4	O	COMPUTER FACILITY	1- 2	2 1/8	- 1/8	-5.5
C	MICRODATA CORP	2- 5	4 1/2	+ 3/4	+3.4	O	COMPUTER TRANSCIVER	1- 2	1 1/2	+ 1/8	+9.0
O	MOLULAR COMPUTER SYS	5- 19	19 1/4	+3 1/4	+20.3	D	COMTEN	2- 5	4 5/8	- 1/4	-5.1
N	NCR	15- 39	34 3/4	+ 3/8	+1.0	N	CONTRAC CORP	12- 22	21 3/4	+2 3/4	+14.4
N	PERKIN-ELMER	16- 30	27 7/8	- 1 3/4	-5.9	O	DATA ACCESS SYSTEMS	1- 3	2 1/8	0	0.0
N	RAYTHEON CO	26- 59	57	+ 5/8	+1.1	O	DATA 100	5- 16	13 3/4	- 3/4	-5.1
N	SINGER COMPANY	10- 17	16 3/4	+1 5/8	+10.7	A	DATA PRODUCTS CORP	2- 6	5 5/8	- 1/8	-2.1
N	SPERRY RAND	26- 49	46 7/8	- 1/4	-0.5	D	DATA TECHNOLOGY	1- 3	1 3/4	0	0.0
A	SYSTEMS ENG. LABS	1- 5	4 1/8	- 1/4	-5.7	O	DATUM INC	1- 2	1 1/8	0	0.0
C	ULTIMAC SYSTEMS INC	1- 6	7 7/8	+1 1/2	+23.5	O	DATUM INC	1- 2	1 1/8	0	0.0
N	VARIAN ASSOCIATES	7- 18	17 3/4	+1 7/8	+11.8	O	DECISION DATA CORP	4- 7	6 3/8	0	0.0
N	WANG LABS.	7- 17	15 1/4	- 5/8	-3.9	O	DEFLTA DATA SYSTEMS	1- 1	1 1/4	0	0.0
N	XEROX CORP	51- 86	70	+1 3/8	+2.0	N	DI/AN CONTROLS	1- 1	1 3/8	- 1/8	-8.3
<b>LEASING COMPANIES</b>					<b>SUPPLIES &amp; ACCESSORIES</b>						
O	COMDISCO INC	1- 5	4 5/8	0	0.0	D	EMULX PRODUCTS INC	12- 25	22 1/2	+ 1/4	+1.1
A	COMMERCE GROUP CORP	2- 4	3 1/4	+ 1/8	+4.0	N	ENNIS BUS. FORMS	5- 7	6	0	0.0
A	COMPUTER INVESTORS GRP	1- 2	1 1/4	+ 1/4	+25.0	O	GRAPHIC CONTROLS	8- 21	15 1/2	+ 7/8	+5.9
H	DATRONIC RENTAL	1- 1	5/8	- 1/8	-16.6	N	3M COMPANY	43- 68	64 3/4	-2 1/8	-3.1
A	DCL INC	1- 1	1/2	0	0.0	O	MOORE CORP LT)	39- 51	51	- 1/4	-0.4
N	DRP INC	3- 6	5 3/4	+ 3/4	+15.0	N	NASHUA CORP	15- 22	17 1/2	+ 3/4	+4.4
D	EDR RESOURCES	2- 2	2	0	0.0	O	REYNOLDS & REYNOLD	11- 24	15 1/2	- 1/2	-3.1
A	GRANITE MGT	1- 5	4	- 1/8	-3.0	D	STANDARD REGISTER	11- 18	18 1/4	+ 1/4	+1.3
A	GREYHOUND COMPUTER	2- 3	3	- 1/8	-4.0	O	TAB PRODUCTS CO	4- 8	6 1/2	0	0.0
A	ITEL	3- 8	8 1/4	+ 1/2	+6.4	N	UARC	17- 24	21 7/8	- 3/8	-1.6
N	LEASCO CORP	4- 3	6 3/8	+ 1/2	+8.5	A	VANIER GRAPHICS CORP	4- 7	5 1/4	- 1/2	-8.6
O	LEASRAC CORP	1- 1	1 1/4	0	0.0	A	WABASH MAGNETICS	3- 5	4 3/4	+ 3/8	+8.5
O	LECTRO MGT INC	1- 1	1 1/8	0	0.0	N	WALLACE BUS FORMS	15- 25	22 1/2	- 1/2	-2.1
C	NRG INC	1- 4	4 1/8	+ 3/8	+10.0						
A	PIONEER TFX CORP	2- 6	6	+1	+20.0						
A	ROCKWOOD COMPUTER	1- 1	5/8	0	0.0						
N	U.S. LEASING	9- 14	11 1/2	- 3/8	-3.1						

EXCH: N=NEW YORK; A=AMERICAN; R=RHIL-BALT-WASH  
L=NATIONAL; M=MIOWEST; O=OVER-THE-COUNTER  
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